THE IRON TRADE REVIEW

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Unexpected Demand for Basic Pig Iron

Buyers Fail to Find Satisfactory Prices On Large Tonnages—
Shading of Quotations On Finished Materials Continues

Cheerful news continues to come from Pittsburgh, where mill activities are at a satisfactory rate and specifications in most lines are heavy, but in other sections mills are running at from 50 to 60 per cent of capacity, new business is dull and prices are extremely irregular.

Pig Iron

Unexpected demand for basic pig iron has materially strengthened the market in the central west. In addition to a number of inquiries, ranging from 10,000 to 20,000 tons, for Pittsburgh and Ohio delivery, a foreign concern has been inquiring for from 40,000 to 50,000 tons of basic and Bessemer pig iron. The companies inquiring for large tonnages have not been able to obtain satisfactory quotations, and at least one large concern has withdrawn temporarily from the market. Small tonnages of basic have been sold at from $12.40 to $12.50, valley. A Delaware river foundry is in the market for 5,000 tons and more buying by pipe companies is expected. Owing to reduction in freight rates from England to Mediterranean points, inquiries for southern pig iron for shipment to Italy have been withdrawn and there seems to be very little prospect of American makers being able to sell pig iron to Mediterranean buyers.

Iron Ore

A heavy increase in shipments of Lake Superior iron ore this year is indicated by the evident determination of the Steel Corporation largely to increase its shipments and by estimates of independent producers that their shipments will show an increase this year of about 3,000,000 tons, compared with last year. If these estimates prove to be correct, the movement for 1912 will be fully 40,000,000 tons, and one high authority estimates that it will exceed the record of 1909, when 42,586,869 tons were shipped. Nothing is known as to lake ore prices, except that they will be somewhat lower than those of last year.

Railroad Buying

The Pennsylvania lines east have contracted for 15,000 tons of plates and shapes for 800 steel cars. Hopes that orders for a large number of cars would be placed at an early date have not been realized, although inquiries for a fair number are pending. The Rock Island lines will shortly come into the market for 25,000 tons of rails. Several other systems, including the Santa Fe, Frisco and Gould lines, are understood to be considering their requirements. The Chesapeake & Ohio will divide 12,000 tons of rails between the Cambria and the Maryland steel companies. The Hocking Valley has ordered 4,000 tons of open-hearth rails from the Cambria Steel Co. In addition to the tonnage reported last week, the Great Northern is understood to have contracted for 31,000 tons of rails from the Colorado Fuel & Iron Co. and 20,000 tons from the Pennsylvania Steel Co.

Structural Awards

A number of important contracts have been placed in the eastern territory for structural material and other large tonnages are pending. Among the new projects in New York are a 23-story hotel to be erected in New York by the New York Central railroad, which will require 10,000 tons, and a store for Stern Bros., which will require from 5,000 to 6,000 tons of shapes. Among Metropolitan contracts awarded were the New York *Times* annex, 2,500 tons; Kline & Jackson loft, 2,600 tons; Hoffman House loft, 1,700 tons; Fisher loft, 1,000 tons, and Brooklyn High School, 1,000 tons. The American Bridge Co. will get the contract for 15,000 tons for the New York Edison Co. power plant, New York. The gun factory at the Washington navy yard, 1,000 tons, has been awarded to a Baltimore concern. The Webster building, Chicago, 1,600 tons, has been placed with A. Bolters' Sons.

Coke

The recent purchase of about 8,000 tons of tin plate by the Standard Oil Co. aroused keen competition. It is understood that about half the tonnage went to the American Sheet & Tin Plate Co., and that the remainder was divided among several independent companies. The price was about $2.75 per base box. The purchase apparently represents the requirements of only one subsidiary. Owing to the disintegration, the various companies are buying for their own needs.

Tin Plates

Owing to fear of a strike of coal miners, backwardness of shipments due to cold weather and scarcity of cars, coke prices are firm and tending upward. A number of companies are now asking $2.40 at ovens for foundry grade, and furnace coke is quoted at $1.85 to $2.00.

WORLD'S IRON MARKETS

Pittsburgh

Little New Business, But Market Stronger in Sentiment.

2148-49 Oliver Bldg., Feb. 27.
Office of THE IRON TRADE REVIEW,

Increasing interest in the pig iron market has marked the closing week of February, more inquiries appearing among the furnace interests than for over a month, and with the generally firm attitude of the market during the extreme quiet of the early portion of the month, any gain in volume of business may be expected to show somewhat quickly on the prices now holding for pig iron. The strength of the semi-finished steel trade has not wavered, but has shown to better advantage with additional tonnage becoming available. The plate trade has stiffened materially, and leading producers are shutting off on low priced orders, having taken all they care to fill. Structural prices have also stiffened to some extent. There is a continued heavy specification against orders for wire products that has fully enabled mills to maintain their schedule of operations for the month at a high rate. The tin plate trade has been seasonably quiet as to new business, but buyers are specifying liberally and production is on a slightly better basis. Bars are still selling below the nominal market quotations both for steel and common iron and there is considerable capacity not in service at the mills.

The strong position that has developed in the coke trade is attracting attention. Furnace coke is rapidly gaining the ground it lost after the opening of the new year and talk is freely heard of $2 coke within a week more, as consumption is increasing apparently at a more rapid rate than has production. Foundry coke is also showing much firmness and it is expected that it will hold its position with respect to the furnace grades. Car orders have slightly enlivened the week from the car material standpoint, the orders placed being of fair size and largely for the all steel variety of freight carriers. The railroads are also specifying heavily on recently placed orders for rails, and have forced rail mills into a higher state of activity. Light rail trade has continued to increase in demand and this market has reached its best position in some time, with a tendency toward higher prices.

The general tone of the steel market is regarded as more satisfactory and healthful. Actual new business is not of important dimensions, but the fact that buyers are taking liberally of material against contracts already placed has stirred into activity much latent interest and a better buying movement is freely predicted for the approaching spring. Merchant pipe trade is continuing strong and active, and line pipe demand is quieter, largely because of the weather conditions existing.

Pig Iron.—There has been more inquiry for pig iron during the past week than at any time for a month. While some of the inquiries are rather indefinite, as to source, between 90,000 and 100,000 tons figure in the estimate for basic iron alone. The larger furnace interests profess to see early indications of a general buying movement that will be on during March. One inquiry for from 10,000 to 20,000 tons of basic for prompt shipment, is believed to be for Pittsburgh territory, while another inquiry for from 12,000 to 15,000 tons is for Ohio delivery, and a third asking for a round tonnage approximately 50,000 tons, reported to have come from a foreign company. There has been a fair volume of small orders for basic during the week from carload lots to 400 tons at $12.40 to $12.50 valley. Malleable iron is somewhat softer in small sales for $12.50 to $13 according to analysis, and the attractiveness of the business. The majority of new orders, however, are placed about $12.75 and considerable at $13 valley. In gray forge the market remains quiet, and only small lots are reported as reaching the furnaces during the past week. Bessemer iron is extremely quiet, not enough sales being reported to make the market, but nominally prices remain at $14 valley. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.00
Bessemer, Pittsburgh	15.15
Basic, valley	12.40
Basic, Pittsburgh	13.30
No. 2 foundry, Pittsburgh	13.90
Gray forge, Pittsburgh	13.40
Malleable, Pittsburgh	13.65

(First Quarter.)

Bessemer, valley	$14.00
Bessemer, Pittsburgh	14.90
Basic, valley	12.40
Basic, Pittsburgh	13.30
No. 2 foundry, Pittsburgh	13.90
Gray forge, Pittsburgh	13.40
Malleable, Pittsburgh	13.65

Ferro-Alloys.—The market for ferro-alloys is moving slowly, with sales of carload lots in the Pittsburgh district at firm prices. Inquiries are very light, ferro-manganese remaining at $41. Fifty per cent ferro-silicon is firm at $70, while the domestic grades are quiet, such sales as are going being made at firm prices. Ten per cent is going at $20, with a few small sales reported during the week.

We quote ferro-manganese nominally at $41, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Specifications against contracts on steel plates have increased steadily, and the margin between mill capacity and orders on mill books has reached a point that has stiffened the price considerably. The leading interest announces, in view of this condition, that it will no longer consider tenders of tonnage below 1.15c. While important independent interests have taken practically the same stand, there is not a large new tonnage coming out as yet. The volume of business, however, is normal for this season, and inquiries indicate improvement with the more moderate weather conditions. There is no denying the fact that attractive business in plates can be done at less than 1.15c, but it seems generally accepted that about all manufacturers desire of lower priced business is on their books. It would have to be very attractive business to secure any concession from the present attitude of the manufacturers. The demand for car ma-

terial is somewhat quiet. The order for 2,000 cars awarded this week by the Bessemer & Lake Erie railroad was understood to have been divided between the Pressed Steel Car Co. and the Standard Steel Car Co., 1,000 steel gondolas, of 100,000 pounds capacity, going to the Pressed Steel Car Co., and 500 gondolas and 400 composite box cars and 100 all-steel box cars, going to the Standard Steel Car Co. There are a few small orders during the past week taken by the car building companies, including 50 tank cars for the Northern Pacific railroad, and a scattered lot of box and gondolas for other lines. The demand for ship plates has been steady, on specifications against contracts. Some inquiries are in hand for a good tonnage in ship plates, which are expected out in a short time. Mills are a little behind in deliveries in both east and west markets. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.10 to 1.15c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—There is a very fair run of specifications on sheets, and mill operations are being maintained with some slight improvement in car service, owing to the softening of the weather conditions, and while prices are believed to be a little weaker on contract buying, the manufacturers report generally a fair condition of trade. The sales on new business are limited, and it is believed that a number of mills have recently extended their contract offerings from April to July 1 at 1.80c for No. 28 gage black sheets, and at the same time are refusing spot business under 1.85c. There is still considerable business going at 1.90c. The demand for galvanized sheets is quite strong and the market shows considerable more firmness, and while some business is being done at 2.85c, 2.90c is nearer the average price obtained. There is a fair demand for roofing sheets coming out. We quote the market as follows:

Blue annealed sheets No. 10 gage, 1.35c to 1.40c; black annealed sheets No. 28 gage, 1.80c to 1.90c; galvanized sheets, No. 28 gage, 2.85 to 2.90c; painted roofing sheets, $1.35 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.45 per square for No. 28 gage, 2½-inch corrugation, f. o. b. Pittsburgh.

Tin Plate.—While new business in tin plate is seasonably light, there has been an improvement in specifications against contracts for delivery, and mills report very satisfactory conditions. The market is firm, with some attractive business going at $3.35, but the majority of sales hold firm to the nominal quotation of $3.40, base. The recent order of the Standard Oil Co. of New York for approximately 160,000 boxes for reexport business, it appears, was not awarded to one prominent independent, but was divided between three interests, and while the exact price at which this order was placed is not stated, it is known that only about 25 per cent of the order was taken by the company at first reported to have received the entire tonnage. It is understood that the leading interest received a portion, and that another large independent took the remainder. Current orders are expected to increase materially as the season advances. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.35 to $3.40 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—There has been a marked increase in specifications by railroads on standard section rails against recently placed contracts for 1912 delivery, and as a result, rail mills are running at a better schedule than for some time past. While new tonnage is capable of considerable improvement, there are enough orders on the books of the leading manufacturers to keep them well occupied for some months ahead. The light rail demand has shown a sharp gain during the past week, both in the tonnage placed and the stiffening of prices. It is estimated that the production of light rails for February will slightly exceed that of January on the average, and will equal in volume the first month with two days less running time. There is a tendency towards better prices, which is regarded as favorable for light rails to regain some lost ground in values. The market is much broader, and a fair volume of orders is on hand for export shipment. There is a better inquiry for track material, and with improvement in weather conditions, shipments are expected to increase materially. Prices are quite firm. The market is quoted as follows, and the base price on open-hearth steel rails 1.34c per pound at the mills.

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9-16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ¾	.30
2½ x ⅞	.40
2½, 3 and 3½ x ⅞	.60
2 x 1	.80

Steel.—While there has been some new capacity added to the semi-finished steel production of the Pittsburgh district during the past week, the market remains strong and active. The easing up of the supply merely causes prices to steady down to $20, Pittsburgh, for Bessemer and open-hearth rolling billets, and $21 on Bessemer and open-hearth sheet bars. The majority of producers are booked well into the third month ahead on open-hearth productions, and there is considerable quiet buying reported by consumers who are supplementing their existing contracts, which run short of requirements. On this buying there has been a firm attitude taken, and as the leading interest continues out of the market, the volume of tonnage going to independents has been large. Youngstown mills are not meeting the Pittsburgh competitive figures, offering to accept Bessemer billet orders at $19.50, mill, only, and open-hearth at $20, mill, with deliveries from 60 to 90 days ahead. There is still a scarcity in open-hearth sheet bars for prompt shipment, most producers being well sold up for the next 60 days. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20, with the usual extras for size and analysis, and open-hearth rolling billets, $20; Bessemer sheet and tin bars are quoted at $21, and open-hearth sheet bars are quoted at $21, f. o. b. Pittsburgh, with full freight to destination added. Forging billets are quoted at $28, Pittsburgh.

Hoops and Bands.—There is a very satisfactory specifying against contracts for hoops and bands, and while new business is not important, consumers are apparently in need of stock, and are urging prompt shipments. Prices are firm, and mills are maintaining a good running schedule. We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.15c, base, with net extras, as per standard steel.

Merchant Bars. — The demand for merchant bars continues about the same, and there is considerable spare capacity which tends to prolong the weakness in prices for attractive business. While

manufacturers are disposed to hold firmly to the 1.15c base on ordinary business taken at this time, there is no difficulty in placing orders at 1.10c f. o. b. Pittsburgh. There is some hesitancy, however, in accepting any extended delivery contracts at the lower price. The situation among eastern mills is said to have improved somewhat, and there is less heard of the lower quotations in that section. Independent producers of the middle west are active in securing what tonnage there is going, and the market will not likely show any increased firmness until those interests are better cared for as to new tonnage. In the common iron bar market such new business as is being booked at present, is mainly at 1.30c, f. o. b. Pittsburgh, and some mills are declining to accept business below the nominal price of 1.35c. Some reports of buying as low as 1.25c, Pittsburgh, base from producers outside of the Pittsburgh territory are prevalent, but lack confirmation. In the steel shafting market there is very little change noted, orders being light, and manufacturers having considerable spare capacity. Prices are a little weaker. The automobile industry is specifying a little more freely on contracts, and are the only division of trade showing any marked interest in the production. We quote the market as follows:

Common iron bars, 1.30c, Pittsburgh; Bessemer and open-hearth steel bars, 1.10 to 1.15c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled and ground shafting, 65 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar.—Very little interest is shown in muck bar, inquiries being at low ebb, and specifications are running somewhat lighter on contracts, so that consumers are apparently well satisfied and supplied for immediate requirements. Shipments are fair, and we continue to quote $28 to $29, Pittsburgh.

Structural.—There is an improved tone to the structural market, but without any material increase in new business. The situation is similar to that of plates, specifications coming out more freely, and filling up mill order books, so that capacity is being more fully taken for immediate shipments. Fabricators are figuring on considerable new work, but report no important contracts awarded. The better position of the mills on specifications has caused a firmer tone to prices, and less is heard of shading 1.15c on structural material than a week ago. Such new business as is taken the past week is of small tonnage, and at market prices. However, in the aggregate, it fully equals the preceding week. We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.15c; tees, 1.15c; angles, from 3 to 6 inches, 1.15c; over 6 inches, 1.25c; universal and sheared 1.15c to 1.20c; over 15 inches, 1.25c to 1.30c, plates, 6¼ inches wide and wider, 1.25c.

Merchant Pipe. — Activity in the merchant pipe trade is continuing in a more satisfactory manner through February, and operations of the mills are at a higher rate than during January. Prices remain very firm, and shipments are going forward in good volume. There are rumors of a prospective advance in price during March, but with no apparent basis. Line pipe buying is confined to small tonnages and car-load lots, the only important inquiry not yet developed into a definite contract, being that of 75 miles of 12-inch steel line pipe for Ohio delivery, concerning which nothing as yet has been done. We quote the official discount to jobbers subject to the usual preferential discount to the larger buyers:

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	74	54	68	48
⅜ inch	75	65	69	59
½ inch	78	68	72	62
¾ to 1¼ inch	81	73	75	67
2 to 3 inches	82	75	76	69
	Lap weld.			
2 inches	79	72	72	65
2½ to 4 inches	81	74	74	67
4½ to 6 inches	80	72	73	65
7 to 12 inches	77	68	71	61
13 to 15 inches	55	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅜ inch	70	60	65	55
½ inch	75	69	70	64
¾ to 1¼ inch	79	73	74	68
2 to 3 inches	80	74	75	69
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	65
2½ to 4 inches	81	74	74	67
4½ to 6 inches	77	71	72	66
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	54
¾ to 1¼ inch	68	62	63	57
2 to 3 inches	70	64	65	59
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	55
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price.)

Boiler Tubes. — Specifications are very fair on existing contracts for boiler tubes, and mills are enabled to increase slightly their running schedule, while shipments have been somewhat increased owing to a better activity in the locomotive building industry throughout the country. The market remains firm, and indications of an enlarged buying movement through increased inquiries is reported by leading manufacturers. The official discount on steel and charcoal iron boiler tubes, follows:

Steel:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3½ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65

Charcoal Iron:

1½ inch	48
1¾ to 2¼ inch	50
2½ inch	55
2¾ to 5 inch	60

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—New business for wire products is still very light. Producers are rapidly cleaning up on contracts taken on the $1.50 base, and a test of the first advance of $1.55 will be made in a week or ten days, when the higher price becomes effective. Mills are well occupied and specifications are in for practically the entire tonnage booked on the lower list. There is some inquiry in the market reported for additional wire products on the later advance to $1.60, but largely it is believed to test out the strength of the market. Shipments are heavy, and the production of wire products is at a high point. February, it is believed, made one of the best records in point of production in a long time. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.60; retailers' carload lots, $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—The demand for wire rods continues very satisfactory on existing contracts and there is considerable inquiry reported for new tonnage, which has strengthened the market in tone. The leading producers are not trying to secure new business at present at the expense of profits as they are comfortably supplied with running orders. Prices remain steady at $26 for forward delivery. A slightly better price could be made, however, on prompt shipment orders. We continue to quote $25.50 to $26, Pittsburgh, for Bessemer and open-hearth wire rods.

Coke.—There has been a distinct

gain in the coke market both for foundry and furnace grades, and this in face of the increased tonnage, which was made possible by the moderation of weather conditions last week. The market for furnace coke has tightened considerably. Where it was possible a week ago to get a reasonable tonnage at $1.80, $1.85 is now the lowest quoted, and $1.90 is being done generally, both for spot and contract sales. The large number of consumers of furnace coke who had covered their requirements for the first quarter and half of the year have been forced into the open market, because of the inability of the oven interests to maintain the schedule of shipments. This, with an increasing consumption of blast furnaces, that are specifying on full contract requirements, has cleaned up the market of available stocks. The foundry situation is affected somewhat similarly and sales have been made the past week of three and four carload lots for prompt shipment at $2.50, ovens, and the contracts taken, while not extensive, are all at $2.40 or above for standard Connellsville foundry coke, for the rest of the first quarter. The same for the first half delivery. The spot furnace coke sales during the past week have reached $1.90. Some of the leading coke companies declined to accept business under that price, and some are even holding out for $2 on all incoming business. Fear of the impending labor troubles in the mining regions, with a consequent shortage of fuel, has stimulated buying of coke, but not as much as has been generally reported. Production last week in the Connellsville region showed an actual gain of 39,095, as compared with the week before. The increase was almost entirely with the furnace grade, the merchant ovens showing a gain of only 1,300 tons over the prior week's record. Better weather conditions enabled a far better running time, and this helped out the production materially. We quote standard Connellsville furnace coke for prompt shipment $1.85 to $2, ovens, and high grade Connellsville foundry coke $2.35 to $2.50, ovens, for prompt shipment, and from $2.25 to $2.40, ovens, for contract shipment. The Connellsville *Courier* for the week ending Feb. 17 reports 30,592 ovens active with a production of 393,664 tons, as compared with 30,434 ovens active, and a production of 354,569 tons, the previous week.

Old Material. — The market for scrap remains practically unchanged, with prices at the lowest level and at the lowest average for some years. Inquiries are very light, and buyers are not showing any disposition to close for any considerable tonnage at present prices, in face of the fact that they are the lowest the market has held in several years. Sentimentally, the market for old iron axles has weakened, though sales are insufficient to make a new quotation. The nominal price is off, however, 50 cents from a week ago, the quotation being $21 to $21.50 instead of $21.50 to $22. We quote gross tons, delivered in the Pittsburgh district, including Monessen, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$12.25 to 12.75
Rerolling rails	12.75 to 13.00
Malleable	12.00 to 12.50
Bundled, sheet scrap	10.50 to 11.00
Iron axles	21.00 to 21.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	12.50 to 13.00
Old car wheels	12.50 to 13.00
Low phosphorus	15.00 to 15.50
Machine shop turnings	9.25 to 9.75
Cast borings	9.00 to 9.25
No. 1 cast scrap	12.50 to 12.75

Chicago

Some Improvement in Pig Iron.—Liberal Fabricating Orders.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., Feb. 27.

Some improvement in pig iron inquiry and liberal fabricating orders constitute the chief developments of interest in the west during the past week. Railway orders for structural material are especially prominent and the Great Northern is in the market for 3,400 tons of additional bridge material. There has been no decrease in mill operations in the west, although production in the past ten days has been hampered by inclement weather. Mills rolling plates, structural material, sheets and bars are very well supplied with business; new orders for these products are fairly good, but are not equal to shipments.

Pig Iron.—Considerable inquiry for southern iron has developed recently. The M. Rumely Co. is in the market for 1,000 tons of No. 2 foundry for shipment over the first half and it is probable that this business will be closed some time this week. An Illinois foundry, manufacturing gas engines, is inquiring for 1,500 tons of southern No. 2, and a Chicago manufacturer of gas engines and railway supplies is also in the market with a similar inquiry. An eastern Illinois manufacturer is inquiring for 800 tons of foundry iron and another manufacturer in the same territory has purchased 300 tons. A Milwaukee manufacturer of heavy machinery has purchased 200 tons of southern iron for immediate shipment. A Chicago firm building railway equipment is in the market for a small quantity of 5 to 6 per cent silicon, high manganese iron. Prices are being fairly well maintained, although some southern iron is available at $10.25, Birmingham. Although inquiry has improved, sales remain slow and the total sales for February in this territory will be only fair. The situation respecting northern iron is practically unchanged. There is a pronounced shortage of foundry coke due to some extent to the closing down of many ovens which ordinarily produce foundry and furnace coke alternately.

The following prices represent the market for Chicago delivery, except Northern foundry and malleable Bessemer made in local furnaces, which are quoted f. o. b. furnace:

(First Half Shipment.)

Lake Superior charcoal	$16.50
Northern foundry No. 2	14.00
Southern foundry No. 2	14.60
Southern silveries, 5 per cent silicon	15.60
Jackson Co. silveries, 8 per cent	17.40
Malleable Bessemer	14.00
Alabama basic	14.85

Billets.—The billet situation in the west is practically unchanged; demand is fair and prices are well maintained. We quote, for Chicago delivery, as follows: Open-hearth forging billets, $26.50 and re-rolling billets, $23.

Merchant Bars. — Specifications for steel bars are holding up remarkably well, due to some extent to requests for more liberal tonnages by agricultural implement makers. The hard steel mills in this territory have plenty of business on hand to keep them busy running single turn, or at about 60 per cent of capacity. Prices of hard steel show no change. The demand for shafting is moderate. Shipments of iron and steel out of stock have increased slightly during the past ten days.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.15c to 1.20c; hard steel bars, rerolled, 1.15c to 1.20c; soft steel bars, bands and small shapes, 1.25c to 1.33c, base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 60 per cent off list for carload lots, 55 per cent off for less than carloads.

On iron and steel from local stock, we quote, as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.50c to 1.60c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—Liberal fabricating orders have improved the structural situation from a tonnage standpoint, although prices show no change. The leading mills in this territory are offering delivery on the ordinary run of orders in from six to eight weeks. The Webster building, Chicago, 1,600 tons, has been let to A. Bolters' Sons.

The McClintic-Marshall Construction Co. has taken 498 tons for an office building at Fresno, Cal. The Minneapolis Steel & Machinery Co. has orders for seven 80-foot plate girder spans, 259 tons, from Hennepin county, Minn. King county, Wash., has ordered one 220-foot span, 102 tons, from the American Bridge Co. The Chicago, Milwaukee & Puget Sound railway has let 242 tons of bridge material to the Wisconsin Bridge & Iron Co. The St. Louis & Southwestern Railway Co. has awarded a contract for two riveted truss spans, 251 tons, to the Phoenix Bridge Co. In addition to the tonnage reported placed last week, the Great Northern railway is in the market for 3,400 tons of bridge material.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.28c to 1.33c. For extras, see Pittsburgh report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.60 to $1.65 per 100 pounds; angles over 6 inches, $1.70 to $1.75 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.60 per 100 pounds, base; channels, 3 inches and larger, $1.60 per 100 pounds, base.

Rails and Track Fastenings.—The Gary rail mill starts this week with a fair accumulation of orders. In addition to the tonnage reported last week, the Great Northern railway is understood to have placed orders for 31,000 tons of standard rails with the Colorado Fuel & Iron Co. and 20,000 tons with the Pennsylvania Steel Co. The Kansas City Terminal has ordered 2,000 tons of rails from the Illinois Steel Co. and the Tennessee Central has placed 2,000 tons with the Tennessee Coal, Iron & Railroad Co. There is a fair demand for track supplies, which is expected to increase when the weather moderates.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.50c to 1.55c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.90c base.

Plates.—The price situation remains unchanged, concessions being made occasionally by outside mills endeavoring to reach this territory. The local makers, however, are not allowing any important business to get away. The Chicago mills have plenty of tonnage on their books and would be in a comfortable position for a couple of months even if no further orders were received. The inclement weather during the past week has interfered with shipments considerably. Car business continues in an intermittent way. The Great Northern is said to be asking prices on 100 40-ton ballast cars and the Nashville, Chattanooga & St. Louis is said to be in the market for 150 box cars. The Grand Rapids & Indiana railroad is in the market for 300 50-ton gondola cars and 50 30-ton steel underframe automobile cars. The Rock Island lines have ordered 20 steel combination baggage and mail cars and 10 steel combination passenger and baggage cars from the Pullman Co., and 10 steel baggage cars from the American Car & Foundry Co. Coach builders are now very well supplied with business.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.28c to 1.33c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.60c.

Sheets.—The situation in this market is practically unchanged and without features of interest. The tonnage being received is very satisfactory to the mills and prices remain at the same level. There is a moderately good demand for sheets out of stock.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 1.90c; No. 12, 1.95c. Box annealed, No. 28, 2.30c. Galvanized, No. 28, 3.35c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The wire mills in this territory are being operated practically at capacity. Specifications remain satisfactory, although weather conditions have interfered with business considerably during the past week. New business is not large and the price of 1.60c, Pittsburgh, has not yet been thoroughly tested. Makers, however, do not feel at present that any concessions will be necessary.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes. — The market for boiler tubes continues to show slight improvement, and prices are a little stronger. There is a fair movement of tubes out of stock. The merchant pipe business was severely affected by the storms which prevailed throughout the middle west last week and only a minimum tonnage is being moved. Prices are fairly well maintained.

We quote, store prices, on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
Butt.				
⅛ inch and ¼ inch.	71.2	50.2	63.2	42.2
⅜ inch	75.2	64.2	66.2	55.2
½ inch to 1½ inch.	78.2	69.2	71.2	62.2
Lap.				
2 inch	76.2	68.2	68.2	60.2
2½ inch to 6 inch..	77.2	68.2	69.2	60.2
Card Weight.				
7 inch to 12 inch...	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	66.2	54.2	60.2	48.2
½ inch	71.2	59.2	65.2	53.2
2 inch to 3 inch...	76.2	64.2	....	....
Lap.				
2 inch	72.2	60.2	66.2	54.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	59.2	47.2	....	....
¾ inch to 1½ inch.	62.2	50.2	....	....
Lap.				
2 inch	60.2	48.2	....	....
2½ inch to 6 inch..	61.2	49.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch.....	55	40	35
2¾ to 3¼ inch.....	65	50	46
3½ to 4½ inch.....	67½	50	46
5 to 6 inch.....	55	..	..

Cast Iron Pipe.—Considerable spring business is commencing to make its appearance. Bids were opened Feb. 20 at St. Louis on 2,750 tons of water pipe, which was awarded to a Detroit shop, at a price understood to be $23.75, delivered. The United States Cast Iron Pipe & Foundry Co. has taken 1,300 tons at Toledo, O. James B. Clow & Sons are understood to be low bidders on 3,500 tons at New Castle, Ind. A letting of about 200 tons at Owen, Wis., went to a small independent shop.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—The market seems to have reached the limit of inaction and the amount of tonnage moved during the week was so small as to make a fair test of the situation impossible. Prices are somewhat softer, but have not yielded greatly. Rail-

road offerings show some increase, lists having been issued by the Rock Island, and Chicago, Milwaukee & St. Paul. The severe weather has practically put a stop to receipts of scrap from outside points.

We quote, for delivery in consumers' yards, as follows:

GROSS TONS.

Old car wheels	$13.00 to 13.50
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.75 to 13.25
Old steel rails (3 ft. and under)	11.75 to 12.25
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

NET TONS.

No. 1 R. R. wrought	$10.75 to 11.25
No. 2 R. R. wrought	9.75 to 10.25
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	13.50 to 14.00
Iron car axles	18.00 to 18.50
Steel car axles	15.50 to 16.00
Locomotive tires	13.50 to 14.00
Dealers' forge	8.75 to 9.25
Pipe and flues	8.00 to 8.50
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.25 to 6.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.00 to 6.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.25 to 10.75
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.50 to 13.00
Angle bars, steel	9.75 to 11.25
Stove plate and light cast scrap	9.25 to 9.75

Cleveland

Heavy Increase in Iron Ore Movement This Year Expected.

Office of THE IRON TRADE REVIEW, Penton Bldg., Feb. 27.

Iron Ore.—Indications point to a heavy increase in the ore movement next year. While the independents are uncertain as to the amount which they will mine, it is safe to predict that they will increase their shipments 3,000,000 tons and that the Steel Corporation will ship about 4,000,000 tons more than it did this year. These increases would make the movement for 1912 about 40,000,000 tons. One high authority predicts that the movement for 1912 will exceed that for 1911 by 10,000,000 tons. Sentiment in regard to prices has not crystallized. The report from Duluth that a Cleveland firm sold old range non-Bessemer at $3 per ton is officially denied.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The increased demand for basic has been the feature of the market for the past week. Some of the inquiry for basic has come from unexpected sources and it is also true that orders for Bessemer which had not been counted upon will probably be placed at a not far distant date. It is understood that one company which had intended to make a purchase of steel-making iron has temporarily withdrawn on account of not being able to get satisfactory prices. We quote delivered in Cleveland for first half:

No. 1 foundry	$13.75
No. 2 foundry	13.25
No. 2 southern	14.35
Gray forge	12.50
Bessemer	15.15
Lake Superior charcoal	16.50
Jackson co. 8 per cent silvery	17.05

Coke.—Difficulty in making deliveries continues and some foundries are suffering from shortage of supplies. In some cases standard Connellsville coke is being used where stock coke is ordinarily employed. The scarcity of stock coke continues and prices are firm, tending upward. We quote:

Connellsville furnace coke, $1.85 to $2.00 for prompt delivery, and $1.85 to $2.00 on contract; Connellsville foundry coke, $2.25 to $2.50 for prompt, and $2.25 to $2.40 on contract.

Finished Material.—While specifications continue fair and prices on some lines are slightly firmer, new business is very limited and the outlook is not very encouraging. Owing to the proposed change of plans for the city hall, the fabricating of steel purchased some time ago will be stopped for an indefinite period.

Old Material.—There is something more of an opening for heavy melting steel in both local and outside markets, but so far it is confined to inquiries from the outside territory. One local consumer is taking small tonnages for which it has paid $11, but the demand is limited. The other inquiries are for fair tonnages, but the prices offered have not proved attractive so far. The Lake Erie muck mill resumed operating on Monday. However, rolling mills do not appear interested in the scrap market. We quote, f. o. b. Cleveland, but largely nominal, gross tons, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails (under 6 ft.)	11.25 to 11.75
Old steel rails (over 6 ft.)	11.50 to 12.00
Relaying rails	19.50 to 20.00
Old car wheels	11.50 to 12.00
Old steel boiler plate	9.50 to 10.00
Malleable iron (railroad)	11.00 to 11.50
Steel axles	17.00 to 17.50
Axle turnings	8.50 to 9.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	11.00 to 11.50
Country mixed steel	9.00 to 9.50
Bundled sheet scrap	7.50 to 8.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.00 to 9.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	9.50 to 10.00
Machine shop turnings	7.00 to 7.25
Pipes and flues	8.00 to 8.50
Wrought drillings	7.00 to 7.25
Stove plate	9.00 to 9.50
Cast borings	6.50 to 7.00
Wrought iron piling plate	15.50 to 16.00
Wrought iron arch bars	14.50 to 15.00

Cincinnati

Numerous Building Projects—Southern Pig Iron Quiet.

Office of THE IRON TRADE REVIEW, 503 Mercantile Library Bldg., Feb. 27.

Pig Iron.—The market here is still practically at a standstill, with a slight tendency toward improvement. Nothing has developed upon which a conclusion could be based as to whether or not the advanced price of $10.50, Birmingham, which most dealers are asking for No. 2 foundry, would prevail in an active market. Inquiries have been better this week than last, and sales, while still largely in small lots for spot shipment, are generally reported better. Neither, however, have been important enough to have much effect upon the general tone of the market, or to give it a definite test. There is a decidedly better demand for ferro-manganese, and some fairly good sales have been made. Furnaces generally throughout the south and many of those in southern Ohio, are not actively going after business, having their outputs practically contracted for during the first half, and there is not much of a tendency to quote on inquiries of any size for second half delivery, consequently not much business is being done for shipment beyond next June. A decrease of stocks in furnace yards is usually reported, and shipments are being ordered faster than the railroads can take them. It appears that most users of pig iron in this territory have not been inclined to take on large stocks, but prefer to buy sparingly as the iron is needed, until the market settles. Consequently, they cannot always get it when needed, and are seriously handicapped in some cases, for as a more general rule the railroads cannot ship the iron as fast as needed to those melters who have contracted for first half delivery and serious congestions of cars are reported at different points. The $10 iron in Birmingham direct seems to have about disappeared, and if any is left, it is in very small quantities, as the majority of sellers are asking $10.50 for No. 2 foundry. It has been proven, though, that there is still iron in the south on a $10, Birmingham, basis, and so the market can still be quoted at the old figures of from $10 to $10.50. The northern situation has shown no inclination to change, and almost as a whole dealers are asking $13, Ironton, for No. 2 foundry, or $14.20, Cincinnati. A report received here today shows that the

number of idle cars throughout the country has decreased to 18,623, which is the lowest number since October, 1910. Between Jan. 31 and Feb. 14, the decline was 18,623 cars, which is a good sign that railroads are being rushed for shipments. One company here reports that sales made last week to regular customers who always buy from it amounted to 2,100 tons, which is fair considering the market here at this time. Inquiries here include 1,500 tons of southern No. 2 soft and 1,500 of gray forge, both from a Kentucky melter for second quarter delivery; 1,300 tons of northern, 800 tons of Virginia and 250 tons of southern for shipment into Michigan during the third quarter; 600 tons of foundry and 200 tons of charcoal iron, from a northern Ohio user, for second quarter delivery; and 5,000 tons of gray forge and No. 3 foundry for May and June shipment into near eastern territory. Sales during the past week include 1,000 tons of low phosphorus iron to a Michigan concern, and 500 tons of No. 2 soft, for southern delivery. Freight rates from Birmingham, $3.25, and from Ironton, $1.20. We quote Cincinnati prices as follows:

Southern foundry No. 2	$13.25 to 13.75
Southern foundry No. 3	12.75 to 13.25
Southern foundry No. 4	12.50 to 12.75
Southern gray forge	12.50 to 12.75
Mottled	12.25 to 12.50
Southern No. 1 soft	13.75 to 14.25
Southern No. 2 soft	13.25 to 13.75
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.45 to 13.70
Jackson co. 8 per cent silicon	16.45 to 16.95

Coke.—There has been a slight increase in the price of both Connellsville foundry and furnace coke during the past week, the former now being quoted at from $2.30 to $2.40 for both contract and prompt shipment, and the latter at from $1.75 to $1.90 for prompt delivery. There is a good demand for spot shipments and car load lots, as the congested condition of the railroads makes it impossible for dealers to deliver the required amounts to users on scheduled time, and, consequently, the latter sometimes find themselves short of supply. This has been the case for some time. No large sales or inquiries are reported. Prices in the Wise county, Pocahontas and New River districts are unchanged. We quote from the leading coke producing districts as follows:

Connellsville district.	Prompt. shipment.	Contract second half.
Foundry coke	$2.30 to 2.40	$2.30 to 2.40
Furnace coke	1.75 to 1.90	1.85 to 2.00
Wise county district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	$2.00 to 2.10	$2.00 to 2.10
Furnace coke	1.65 to 1.75	1.70 to 1.90
New river:		
Foundry coke	$2.50 to 3.15	$2.60 to 3.25
Furnace coke	2.00 to 2.10	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—There is a plan on hand here at present which, if carried out, will result in the erection of a new 21-story office building on the site of the Johnson building, at Fifth and Walnut streets, at a cost of approximately $1,300,000. The promoters claim that a 99-year lease with the privilege of renewal has been secured on the property, and that the financing of the proposition will be brought about in due time. Preliminary plans are being prepared by Isaac Taylor, architect, of St. Louis. The plot of ground occupied by the Johnson building is one of the best locations in the city, having a frontage of 127 feet on Fifth street, 54 feet on Walnut street and 79 feet on Lodge alley. An addition requiring from 200 to 300 tons of steel will soon be made to the Hauck Brewing Co., this city. The G. S. Kuhlman Car Co., Collinwood, O., which manufactures street cars, will soon resume work in full, and enlarge its plant, but it is not decided to what extent. Alvery Ferguson Co., Oakley, will also make additions to its plant in the near future, with the Allyn Engineering Co., Second National Bank building, this city, as the architect and engineer in charge. The Cincinnati Car Co., Winton place, Cincinnati, is planning large additions, by taking over the barns of the Cincinnati Traction Co., at that place. The present plant of the car company occupies six acres, and as the barns of the traction company cover about the same area, this addition will make it one of the largest manufacturers of street cars in this section of the country. The Cincinnati Car Co. recently booked an order for 100 pay-within street cars for the Public Service Railways of New Jersey, for use on its city lines in Newark. The order amounts to about $500,000, and shipments are to begin within three months. There is nothing new regarding the sale of finished materials. We quote Pittsburgh mill prices on finished products as follows:

MILL PRICES, PITTSBURGH.

Steel bars, 1.10c to 1.15c; iron bars, 1.35c; tank plates, 1.10c to 1.15c; black sheets, No. 28 gage, 1.80c to 1.85c; galvanized sheets, No. 28, 2.80c to 2.85c; sheet, blue annealed, No. 10, 1.35c to 1.40c; structurals, 1.10c to 1.15c, all Pittsburgh basis.

Warehouse business during the past week has been scattered and fair, with possibly a little improvement all along the line. Prices have been practically unchanged. An improvement is looked for as soon as the weather becomes more favorable, so that contractors and builders can go ahead with their work. We quote warehouse prices in Cincinnati, as follows:

WARE HOUSE PRICES.

Steel bars, 1.60c base; iron bars, 1.55c to 1.60c base; structurals, 1.70c base; plates, ¼ inch and over, 1.70c base; sheets, blue annealed, No. 10, 1.90c base; rivets, cone head, 2.25 base; cold rolled shafting, 60% discount; boiler tubes as follows: 1¾ to 2¼ inch, 61 per cent discount; 2½ inch, 63 per cent discount; 2¾ to 3¼ inch, 66 per cent discount; 3½ to 4½ inch, 68 per cent discount; and 5 to 6-inch, 61 per cent discount; and soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.70c; ⅝ inch square and larger, 1.80c; ½ inch square and larger, 1.90c; ⅜ to ⅝ inch square and larger, 2.10c; ¼ inch square and larger, 2.20c to 2.30c.

Old Material.—Aside from a little more activity in rerolling rails which are being sold at from $11 to $11.50, the scrap iron market here is at a standstill. Prices seem to fluctuate quite a little on certain material, but the movements are not strong enough to hold them on a higher or lower basis, and they consequently fall back to the old prices. Sales are not made in lots of any noticeable sizes, and there are no visible signs of stocks either decreasing or increasing in dealers' yards. A recent sale of stove plate brought $6.50 per net ton, but it was hardly large enough to actually test the market. According to a summation of dealers' prices, we quote as follows:

GROSS TONS.

Old iron rails	$12.00 to 13.00
Old steel rerolling	11.00 to 11.50
Old iron axles	18.00 to 18.50
Steel melting scrap	9.50 to 10.50
Car wheels	10.50 to 11.00

NET TONS.

Old No. 1 R. R. wrought	$10.50 to 11.50
No. 1 machinery	10.00 to 10.50
No. 1 busheling	8.00 to 9.00
Stove plate	6.50 to 7.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.50 to 5.00
Grate bars	6.00 to 7.00
Sheet iron, bundled	6.50 to 7.50
No. 1 cast scrap	10.00 to 10.50
Heavy turnings	6.00 to 7.00

Lower Rates Ordered

Lower rates were ordered in the case of the Vulcan Iron Works Co. against the Atchison and other western railroads by the interstate commerce commission. The rate had been 63 cents on bars, plates, sheets and structural steel in carloads from St. Louis to Denver, placing the products on a par with through shipments originating in Pittsburgh. The rate has been changed to 52 cents on bars and 43 cents on plates, sheets and structurals.

The Doylestown Aluminum Ware Co., Doylestown, O., has increased its capital stock from $10,000 to $25,000.

Buffalo

Adverse Weather Conditions Have Had Depressing Effect.

Feb. 26.

Pig Iron.—The week has been characterized by the transaction of little or no business, but as February is always the low ebb period of the pig iron trade, the situation was not unlooked for. Continued extreme cold weather so crippled the railroads, making it impossible to move cars of coke and iron, that many of the lines are struggling to overcome the congestion of cars in transit. This condition has caused foundries and some furnaces, particularly across the Canadian border, to close down because of lack of fuel and iron. The demand on the coke ovens for fuel has created a fictitious situation, and there is now quite a squeeze on coke, the ovens being unable to get men enough to operate them to the extent of the present urgent demand. The prices obtainable, f. o. b. furnaces here, are substantially as follows:

No. 1X foundry	$13.75 to 14.00
No. 2X foundry	13.50 to 14.00
No. 2 plain	13.50 to 13.75
No. 3 foundry	13.25 to 13.50
Gray forge	13.00 to 13.25
Malleable	13.75 to 14.25
Basic	13.75 to 14.25
Charcoal	15.50 to 17.25

Finished Material.—The mills as a whole report a quiet week, there being little or no new business and only a moderate amount of inquiry. What business has been transacted, was principally on filling specifications on old contracts, and on these it appears that many of the users are hundreds of tons behind on their specifications to date. This has not caused any modification of prices. The railroads have already booked a considerable tonnage, and the Buffalo, Rochester & Pittsburgh is about to place its requirements.. Bars are bringing from 1.10c to 1.15c base, and shapes and plates from 1.15c to 1.20c, base, the lower figures being obtainable in instances of very favorable tonnage orders. Mosier & Summers, Buffalo, were low general contract bidders on the face of the bids for the Buffalo technical high school, at $699,900, awards not yet made. The Buffalo Structural Steel Co. was awarded the contract on the Sidway building here, requiring 200 tons, and C. F. Ernst's Sons, this city, were low bidders for the structural work on the St. Mary's hospital at Niagara Falls, requiring 340 tons.

Old Material.—The market has been quiet during the week, because of the inability of the railroads to move material. The weather conditions affecting the roads have tended to lessen the production on the part of the mills, the whole reducing transactions to a minimum. The gross ton prices, f. o. b. Buffalo, are substantially as follows:

Heavy melting steel	$12.00 to 12.75
No. 1 railroad wrought scrap	14.00 to 14.25
No. 1 R. R. and mch. cast scrap	13.50 to 14.00
Old steel axles	18.50 to 19.25
Iron axles	22.00 to 22.50
Car wheels	13.00 to 13.25
Railroad malleable, scrap	12.50 to 12.75
Wrought iron and soft steel turn.	7.25 to 7.50
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	15.75 to 16.00
Old iron rail	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	9.75 to 10.00
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

Birmingham

Sellers Ask $10.50 for Southern Delivery up to July 1.

Feb. 26.

Pig Iron.—The producing interests generally adhere very strictly to their several views in the matter of price and delivery, but the buyers are apparently indisposed to contract heavily at the advanced figures being asked. Sales made in the past week consisted principally of carload lots, which were not attractive in the aggregate, but for which a $10.50 per ton, Birmingham, basis was maintained. It is noted that a small producing company that formerly quoted a basis of $10.25 per ton has advanced to the figures just mentioned above, thereby making a uniform quotation of $10.50 for any delivery prior to July 1. These figures, of course, apply more particularly to southern territory, and would probably be shaded where solicitations were made in competitive territory. Some 2,500 tons, against the local production, was sold in the east during the past week, but the figures considered are not given out. The fact that prompt deliveries have been the chief consideration with the trade for some weeks past is not overlooked by the selling interests in considering commitments for delivery during the last half, and has, no doubt, affected to a certain extent the several positions in that regard. At this time, none of the selling agents is understood to be solicitous of deliveries in the last half, and no price has been established for such delivery. It is quite probable that the $10.50 basis would be acceptable to the majority of the producers for second quarter deliveries extending into, and perhaps through the third quarter, but a vigorous effort is being made to limit the period for delivery of any tonnage sold to the first half. Shipments from furnace yards are still being made at a very satisfactory rate comparatively, and indications are that a further reduction in stocks will be made in this month. Repair forces at the several idle plants have been enlarged, and the active capacity can be increased on very short notice when required. Nothing further has been given out locally in the matter of the consolidation of the properties of the Southern Iron & Steel Co. and those of the Alabama Consolidated Coal & Iron Co. The first named continues to operate the Alabama City, Ala., furnace on basic iron, which is being consumed at the steel plant at that place, while the latter concern only has in operation one furnace at the Gadsden, Ala., plant. We quote the market as below for deliveries to southern territory within the first half, viz.:

No. 1 foundry	$10.75 to 11.25
No. 2 foundry	10.25 to 10.75
No. 3 foundry	9.75 to 10.25
No. 4 foundry	9.25 to 9.75
Gray forge	9.50 to 9.75
Mottled	9.25 to 9.50
Standard basic	10.25 to 10.75
Off basic	10.00 to 10.50
Standard charcoal	22.50 to 23.00

These prices are per gross ton f. o. b. cars at Birmingham district furnaces.

Progress Reported in Southern Iron Merger

James Bowron, formerly vice president, has been elected president of the Southern Iron & Steel Co. H. F. Fleming and John J. Miller have been placed on the executive committee. D. O. Brown has retired from the board. It is announced that the manufacturing profits of the year were $135,000 and the deficit exclusive of interest charges was $146,384, which compares with $680,094 in 1910. As to the proposed merger with the Alabama Consolidated Coal & Iron Co., it is stated that 80 per cent of the securities of the latter company and 90 per cent of the common and preferred stocks of the Southern company had now been deposited. Harvey Fish & Sons, New York, have been appointed syndicate managers of the merger and will dispose of the new securities.

The Aluminum & Metal Specialty Mfg. Co., Newark, N. J., is erecting a new three-story plant.

Philadelphia

Railroads Out For Good Tonnages—Soft Prices—Quiet Market.

Feb. 27.

The rather even trend of new business conditions in the iron and steel trade in the east is unbroken. Eastern mills find difficulty in getting sufficient tonnage to warrant any increase in recent operations, though they are able pretty generally to hold their own. Softness in finished material prices prevails generally. Some of the eastern railroads have lately been putting out round tonnage requirements for various construction purposes. Pig iron conditions are no more active and the market is quiet. Scrap buyers are largely indifferent.

Pig Iron.—It is remarked by sellers how uniformly buyers are acting in their contracting movements and in their absence from the market. For the present, conditions still show the market to be in the slough and trading is neither extensive nor significant. The number of inquiries and opportunities for business are comparatively few. One of the Delaware river pipe foundries is in the market for 5,000 tons of No. 3 and gray forge for April-May shipment and additional buying soon by the other pipe makers in this district is anticipated. A Virginia pipe shop has taken 1,000 tons additional from a Virginia furnace and further inquiry from this source is expected. There is still considerable divergence in eastern Pennsylvania foundry iron. Some Lehigh valley No. 2X was sold within the week on the basis of $14, furnace, and one Philadelphia consumer reports having taken 500 tons at about this level within the past few days. At other eastern Pennsylvania furnaces, about $13.50, furnace, for No. 2 plain, was lately done. Lehigh and Schuylkill valley makers generally quote from $14.25 to $14.50, furnace. In Virginia the usual minimum for No. 2X remains $12.25, furnace. A small sale of Virginia forge to this territory at $12, furnace, or $14.65, delivered, is reported. The receivers of the Central Iron & Steel Co., Harrisburg, have bought 2,000 tons of basic for early shipment from a Lehigh valley maker at about $14.25, delivered. Otherwise the basic market is quiet. A report that the United States Steel Corporation may find it necessary to buy steel-making iron for eastern plants has excited little interest among eastern makers, as the established policy of the leading interest not to enter the market when it can possibly ship metal from any other district is well remembered. For several years the Steel Corporation works in this territory have been supplied by its furnaces in the Pittsburg district. The American Steel & Wire Co., a subsidiary interest, has however just added a purchase of 500 tons of low phosphorus iron to its contract for its Worcester, Mass., plant, for which it has been a regular buyer of this grade. This iron will be furnished by the New York state maker. Small sales of low phosphorus metal continue to be made, and one consumer continues in the market for 5,000 tons.

We quote, delivered in Philadelphia and vicinity, as follows, with local freight and handling charges from docks included for southern and Virginia iron:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
Standard gray forge	14.00 to 14.25
Basic	14.25
No. 2X Virginia	15.50 to 15.75
No. 2 southern	14.50 to 15.00
Standard low phosphorus	19.00 to 19.25

Coke.—Consumers of coke are apparently more moved with the possibility of labor troubles in the coal regions April 1. A Lehigh valley steel company which has been buying furnace coke for early shipment has taken 25,000 tons additional in lots of 12,000, 8,000 and 5,000 tons at prices of $1.75 and $1.80, ovens. Car shortages are making themselves felt in foundry coke and prices are more buoyant. A Latrobe district maker has advanced 25 cents to $2.40, ovens. Some coke is still available at $2.35, ovens, and the range of the market is about $2.35 to $2.50, ovens.

Finished Material.—The market in finished products in this district is featured for the moment by the placing on advanced negotiation of several railroad projects involving heavy steel requirements. The Pennsylvania lines east have placed with a Pittsburgh maker about 15,000 tons of plates and shapes for the building of 800 steel cars in its Altoona shops. The Delaware, Lackawanna & Western railroad is taking alternate bids from fabricated steel or concrete contractors for viaducts for the Tuckhannock 20-mile cut-off near Scranton. If fabricated steel is adopted the requirements will be about 8,500 tons of plates and 10,000 tons of shapes. If concrete, about 2,400 tons of steel bars will be called for. The Philadelphia, Baltimore and Washington division of the Pennsylvania lines this week took bids for the construction of a concrete viaduct over the Bush and Gunpowder rivers, near Baltimore, to require 4,000 tons of steel bars.

Prices in finished products still show general softness. The competition in structural shapes and steel bars appears quite acute and it is reported that in rare cases below 1.10c, Pittsburgh, or 1.25c, Philadelphia, has been quoted in these lines. The minimum quotation on shapes, plates and bars is usually 1.10c, Pittsburgh, or 1.25c, Philadelphia. One buyer in this district has closed with an eastern mill for 1,500 tons of shapes for delivery up to Aug. 1, at a reported low price. Iron bars are not strong at 1.22c to 1.25c, Philadelphia, or 1.15c to 1.18c, eastern mill.

The gun foundry at the Washington navy yard, 1,000 tons, has gone to a Baltimore contractor. The John J. Cain Construction Co., Columbia, S. C., has the general contract for an office building, that city, 700 tons. Bids close March 4 on the Vendig hotel, this city. The Jones & Laughlin Steel Co. will furnish 350 tons of plates for Colon, Panama, docks. Fabricated prices in the district are very low.

A Lebanon, Pa., consumer has closed for 4,000 tons of open-hearth rolling billets for early shipment at $19.50, Pittsburgh. Middle western sellers are quoting forging billets in this district on the basis of $25, Youngstown, or $27.80, Philadelphia. Eastern makers are asking about $26.50, mill, for forging and $21.50, mill, for open-hearth rolling billets.

We quote, delivered in Philadelphia and vicinity, as follows:

Structural shapes, 1.25c to 1.30c; steel plates, 1.25c to 1.30c; steel bars, 1.25c to 1.30c; common bar iron, 1.22c to 1.25c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage, 1.50c to 1.55c; 4 x 4-inch open-hearth rolling billets, $22.40 to $23.40; forging billets, $26.40 to $27.40. Extras shown under Pittsburgh report.

Old Material.—Unfilled portions of some contracts for steel made some time ago at $12.50, delivered, and dated to expire March 1, have been cancelled by eastern consumers. Dealers, although they are buying odd lots around $12, delivered, have had difficulty to get tonnages within a profitable margin of the contract price in the former cases. They are willing to extend these obligations 60 or 90 days, however, which the buyers are not willing to grant. The instances rather reflect indifference of traders than they indicate either the strength or weakness of the market. Conditions in all grades show prevailing dullness. We quote gross tons, delivered in eastern Pennsyl-

vania or New Jersey consuming territory, as follows:

Old iron rails	$15.25 to 15.75
Old steel rails (rerolling)	13.25 to 13.75
No. 1 heavy melting steel	11.75 to 12.25
Old car wheels	12.00 to 12.50
Old iron axles	22.00 to 23.00
Old steel axles	17.00 to 17.50
No. 1 railroad wrought	14.25 to 14.75
Wrought pipe	11.50 to 12.00
Cast borings	8.25 to 8.75
Machine shop turnings	8.75 to 9.25
Heavy cast	12.50 to 13.00
Malleable	11.50 to 12.00
Stove plate	10.00 to 10.25

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

New York

Numerous Structural Awards Let and Pending.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Feb. 27.

Iron Ore.—A small trial cargo of Venezuelan ore, about 800 tons, reached port this week and has been distributed to several eastern furnaces. The ore received is of a specular hematite quality, running about 65 per cent in metallic iron. It was sold on the basis of 8 cents per unit at tidewater. Freight rates on iron ore from Mediterranean points are easier. A charter from Sagunto, Spain, to Philadelphia, has just been made at 9s 3d, which is 3d below last previous engagement. This charter was done on a cargo of Spanish ore, sold to a Delaware river furnace as a substitute for a cargo recently reported lost at sea, but which has now shown up at Bermuda. Eastern ore buyers still are slow to take up the consideration of their forward requirements.

Pig Iron.—Trading conditions in the pig iron market in this district remain extremely sluggish. Sales are usually made up of odd carload lots, with an occasional inquiry for several hundred tons. A Paterson, N. J. consumer closed in the week for 1,800 tons No. 2X and No. 2 plain for second quarter, the low silicon iron going to a Lehigh valley maker at about $14.40, delivered, and the high silicon to another eastern Pennsylvania furnace at about $14.70, delivered. These prices net to the furnace about $13.65 in both cases. An inquiry for 1,000 tons of No. 2 plain, for forward shipment is now pending from a consumer in this district. The International Steam Pump is inquiring for 700 tons of No. 2X and No. 2 plain for early delivery at Holyoke, Mass. The Lehigh and Schuylkill valley makers usually quote from $14.25 to $14.50, furnace, for No. 2X, but some makers more zealous in introducing their brands, are going to $14 in some cases. Cable advices from abroad state that ocean freights from Middlesbrough, England, to Mediterranean ports are softening considerably. As a result of this development, inquiries for about 5,000 tons of Nos. 2 or 3 southern iron, which were recently sent to this country for shipment to Genoa or Venice, Italy, have been withdrawn. It has been the condition of advanced freights from the Middlesbrough district which usually exports to the Italian trade, that had recently given the southern makers of the United States favorable opportunities for exporting to Mediterranean points. Charters on pig iron from New Orleans and gulf points to Venice, have been recently quoted at 15s. To Genoa, they are 1 and 2s less. We quote for prompt and second quarter shipment at New York tidewater as follows, Virginia and southern iron prices being given at docks:

Northern foundry No. 1	$15.20 to 15.45
No. 2 foundry	14.70 to 15.20
No. 2 plain	14.50 to 14.70
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.50 to 14.75
Malleable	15.25 to 15.50
Gray forge	14.00 to 14.25

Ferro Alloys.—Several reports of shading of the $41, seaboard, price, on ferro-manganese, are current, but these seem to be due to the trading manipulations of domestic sellers rather than to any weakening of the furnace price. Makers abroad are quoting firmly and one of them has practically withdrawn from the market. The possible coal strike in England is causing some apprehension. Inquiries are more numerous and exceed 2,000 tons, including one lot of 1,500 tons for delivery throughout the year. Two eastern consumers are in the market, one for 500 tons and another for 300 tons, both for forward shipment. A sale of 500 tons to a steel company at $41, seaboard, is noted. There is little doing in 50 per cent ferro-silicon. The inquiry for 300 tons of silico-speigel for western Pennsylvania, is still pending. We quote 80 per cent ferro-manganese at $41, seaboard, and 50 per cent ferro-silicon at from $68 to $72, Pittsburgh.

Cast Iron Pipe.—Makers of cast iron pipe continue to report a very satisfactory volume of new business, both private and public. Some shops which have accumulated considerable bookings are showing a tendency to quote higher prices, but low levels still mark the situation. The Standard Cast Iron Pipe & Foundry Co. has booked from contractors about 4,000 tons for Brooklyn and 1,000 tons for Pawtucket, R. I. Bids will be taken by the department of water supply, gas and electricity, Feb. 29, on 1,700 tons and on March 6 for about 6,500 tons, including castings, for high pressure water service. Both are contractors lettings. We quote 6-inch pipe at from $22 to $23 delivered, f. o. b. New York in carload lots.

Finished Material.—Conditions in the finished market continue to be disturbed by numerous reports of price cutting and irregularity, most of which appear to be well founded. Some of the larger interests indicate that they are taking a firmer stand on plates, shapes and bars during the past few days but the general strength of the situation has not been increased. Plates and shapes are usually quoted within the range of 1.10 to 1.15c, Pittsburgh, or 1.26c to 1.31c, New York, and bars have dropped more squarely to 1.10c, Pittsburgh, or 1.26c, New York, but these levels do not represent the minimum in all cases. Bar iron is easier. There has been some sharp shading of tin plate prices in the east, particularly on material for export shipment. Fabricated prices are going very low on attractive work and some recent quotations under $40, delivered, are noted. On the whole, the market in this district is not so favorable but hope is expressed that the improved weather will harden the situation.

Structural lettings are fairly heavy and there is a satisfactory amount of work in preliminary stage. The railroad inquiries are fairly numerous, coming from the Boston & Maine. Pennsylvania, Maine Central, New Haven and Baltimore & Ohio, but their total is insignificant. The largest pending proposal is 400 to 500 tons for the Boston & Maine. A number of small bridges for these various roads have been divided this week among different shops. The American Bridge Co., it is announced, will fabricate 800 tons of the New York Central terminal work, this city, recently placed. The Pennsylvania Steel Co. has a small bridge additional for the Central Railroad of New Jersey.

Although formal announcement has not been made, the American Bridge Co. is credited with the 15,000 tons of fabricated material for the large New York Edison Co. power house on 201st street, as it is understood to have submitted the lowest figure. Mulcahy & Gibson, Inc., has been awarded the 2,500 tons of structural work for the New

York Times annex on West Forty-third street; Milliken Bros., Inc., have 2,600 tons for the Kline & Jackson loft near Fourth avenue and Twenty-first street; Levering & Gerrigues, 1,700 tons, for the Hoffman House loft and 1,000 tons for the Fisher loft at Fourth avenue and Thirty-second street. The Passaic Steel Co. has the 1,000 tons for the Bushwick High School, Brooklyn, and 400 tons for a loft on West Thirty-eighth street. The American Bridge Co. has 500 tons for additions to the Stevens Duryea automobile plant at Chicopee Falls, Mass. The Eastern Steel Co. has taken 1,000 tons for a bank building at New Haven, Conn., and the Boston Bridge Works 700 tons for the Columbia National Life Insurance building, Boston. The 700 tons for the Lowell Sun building, Lowell, Mass., originally reported as having gone to the A. E. Norton Co., has been switched to the New England Structural Co. The Stern abattoir, this city, has gone concrete.

In prospective work, the New York Central railroad has announced plans for the erection of a large hotel at its New York Central terminal to be 23 stories in height. The steel requirements will be upwards of 10,000 tons. Plans will soon be out for a new store for Stern Bros. at Forty-second street and Sixth avenue, to require 5,000 to 6,000 tons.

Of the large tin plate orders recently placed by the Standard Oil Co., for the manufacture of containers for export shipment, the American Sheet & Tin Plate Co. received 75,000 boxes for one of the buyer's refineries in the Philadelphia district. In the competition for this business, some very low prices were quoted by the several makers participating. We quote, delivered at New York tidewater, as follows:

Plain structural shapes 1.26c to 1.31c; tank plates, 1.26c to 1.31c; steel bars, 1.26c; common iron bars, 1.25c to 1.30c; plates and shapes from store, 1.70c to 1.30c; plates and shown under Pittsburgh report.

Rails and Track Material. — The Hocking Valley railroad has placed 4,000 tons of open-hearth rails with the Cambria Steel Co. The Chesapeake & Ohio railroad is about to take formal action on its rail inquiry, about 12,000 tons, which will be divided between the Carnegie Steel Co. and the Maryland Steel Co. The Pennsylvania Steel Co. has 500 tons for the Wilkesbarre Railway Co. and the Lorain Steel Co., 4,000 to 5,000 tons of girder rails for the International Railway Co., of Buffalo, and the Public Service Corporation of New Jersey. It develops that the order for tie plates recently placed by the Great Northern railroad will be much larger than originally indicated and will call for 3,000,000 to 4,000,000 plates. This order has been divided among different makers.

Old Material. — The tone of the market remains dull and rather listless. Consumers continue to follow their recent policies of buying additional tonnage sparingly. Prices having been easy for some time appear to be a little harder at the point to which they have now receded. Jersey City and Newark, N. J., foundries are paying about $11.25 to $11.50, delivered, for heavy cast and $12.25 to $12.50 for No. 1 machinery cast. We quote, gross tons, prices dealers will pay at New York tidewater, as follows:

Old car wheels	$10.50 to 10.75
Old iron axles	16.00 to 16.50
Old steel shafting	13.75 to 14.25
No. 1 heavy melt'g steel	9.50 to 9.75
No. 1 R. R. wrought	11.75 to 12.00
Wrought pipe	9.25 to 9.50
Cast borings	6.00 to 6.50
Mach. shop turnings	6.75 to 7.25
Heavy cast	10.75 to 11.00
No. 1 machinery cast	11.25 to 11.75
R. R. malleable	9.25 to 9.75
Stove plate	8.50 to 8.75
Grate bars	6.50 to 6.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York.

METAL MARKETS

Chicago

Chicago, Feb. 26.

New Metals.—Business was moderately good during most of the week. Copper has not changed in price and spelter also remains stationary. Lead is dull and weak, although the demand is fair. Tin prices are a fraction of a cent higher.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

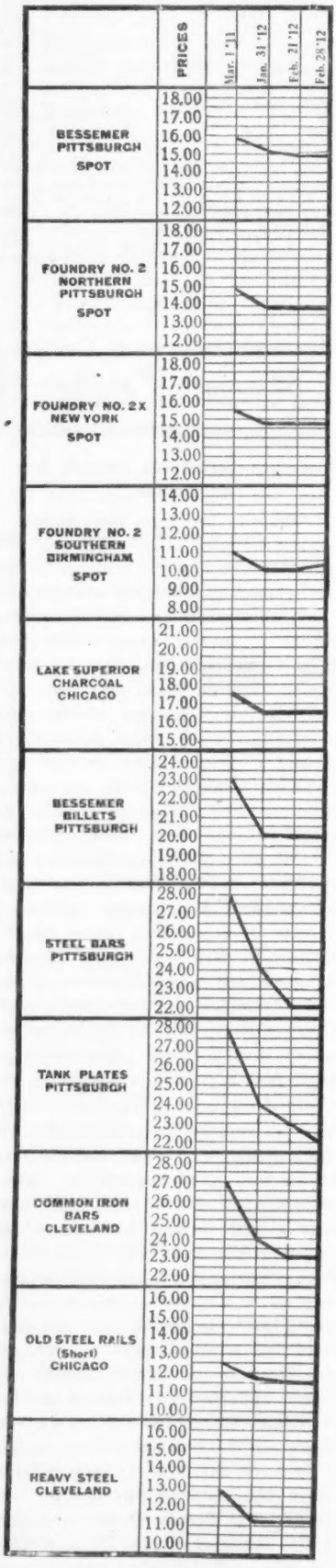
Lake copper, carload lots, 14½c; casting, 14½c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.55c; lead, desilverized, 4c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8.25 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin 43½c. Cookson's antimony, 8¾c; other grades, 7½c to 8¼c.

Old Metals. — The severe weather has interfered with the movement of scrap metals and the range of transactions during the past week was narrow. Prices are taking on a softer appearance and no changes of consequence are noted.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 13c; copper bottoms, 11½c; heavy cut crucible copper, 13c; heavy red brass,

PRICE CHART



11¾c; heavy yellow brass, 9½c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 8¼c; brass clippings, 8¼c; lead pipe, 3¼c; zinc scrap, 4c; scrap aluminum, 12c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 39c; tin foil, 32c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $80 to $85 a ton.

Blast Furnace Appliances Co.

The Blast Furnace Appliances Co., Cleveland, recently incorporated, has organized with the following officers: President, J. C. Cromwell; secretary and treasurer, Arthur G. McKee. The directors are: Walter Kennedy, Pittsburgh; Frank K. Hoover, Chicago; R. E. Baker and J. C. Cromwell, Cleveland. The purpose of the company is to harmonize the control of patents on blast furnace distributing devices and standardize the information and details of construction in regard to them, so that pig iron manufacturers may have the advantage of the latest and best ideas in regard to this class of equipment. The company will be prepared to sell licenses for the construction of distributing machinery under the patents which it controls.

Ralph Flander, of the Fellows Gear Shaper Co., Springfield, Vt., will address the Cleveland Metal Trades Superintendents' and Foremen's Club, Cleveland, on March 16, on "Gear Shapers". His lecture will be illustrated.

The Mobile & Ohio railroad has placed an order for nine locomotives with the Baldwin Locomotive Works.

PAYMENT IS DEFERRED

By Republic Company of Quarterly Dividend on Preferred Stock For April 1.

The executive committee of the Republic Iron & Steel Co. has decided to defer payment of the regular quarterly dividend of 1¾ per cent on the preferred stock due April 1. Relative to this action the following statement was given out at the offices of the company:

"At the meeting of the executive committee of the Republic Iron & Steel Co., held Feb. 26, it was unanimously decided to defer payment of the quarterly dividend of 1¾ per cent on the preferred stock, due and payable April 1, as present and prospective earnings are not sufficient to warrant full payment. And it was the judgment of the committee that under existing conditions of business, tariff uncertainties and political agitation, it was to the interest of the stockholders to conserve the company's cash assets.

"The company is operating at approximately 90 per cent of capacity, and its current prices as maintained will insure a profit. The net quick assets are approximately $12,900,000, which place the company in a strong position, and will enable it to carry through such improvements as are necessary. And when normal conditions of business return, the earning power of the property will be sufficient to discharge dividend obligations."

Chosen President.—H. P. Conolly, of Racine, Wis., was elected president of the Wisconsin Engineering Society at the annual meeting held in Madison, Wis. The other officers elected are: Vice president, Prof. J. G. F. Mack, University of Wisconsin; secretary and treasurer, J. C. White, Madison; trustees, Prof. L. S. Smith, University of Wisconsin, and J. S. McCullough, Madison.

American Society for Testing Materials

The fifteenth annual meeting of the American Society for Testing Materials will be held at the Hotel Astor, New York City, on Thursday and Friday, March 28 and 29. Two sessions will be held each day and the meetings on Thursday afternoon and Friday morning will be devoted to the discussion of committee reports on standard specifications for coal, coke, steel, wrought iron, cast iron and finished castings.

At the opening session on Thursday, committee reports will be submitted as follows: "Magnetic Testing of Iron and Steel," "Tempering and Testing of Steel Springs and Standard Specifications for Spring Steel," "Standard Specifications for Cold-Drawn Steel," "Hardness Tests," "Rules Governing the Form, But Not the Substance of Specifications," "Specifications for Hard-Drawn Copper Wire," "Non-Ferrous Metals and Alloys," and a committee will also report on the definition of the term "modulus of elasticity" in its application to materials, including non-ferrous metals and their combinations.

The report of the nominating committee follows: For president, Robert W. Hunt; vice president, A. W. Gibbs; secretary-treasurer, Edgar Marburg. For membership on the executive committee: J. B. Lober, A. A. Stevenson and S. W. Stratton.

Some Features of This Issue

We are rather proud of today's issue of THE IRON TRADE REVIEW and venture to call the attention of our readers to a few features of unusual importance.

In the first place, there is a report of the hearings held by the finance committee of the senate on the Underwood bill. No other paper in the country excepting *The Daily Iron Trade Review* has covered the hearings with anything like the completeness with which we have presented it in this issue. Two staff correspondents have represented *The Daily Iron Trade Review* and THE IRON TRADE REVIEW in Washington the past week. Some intensely interesting facts in regard to the iron trade were developed.

The proposed federal license bill prepared by Judge Gary by request of the interstate commerce committee of the senate is a measure of the greatest importance; in fact, the most important concrete expression which the country has had of ideas for regulating the great corporations. The bill will excite much discussion. *The New York Times* has already branded it as "preposterous", but other folks will doubtless be just as extreme in terms of commendation. Good will result from the discussion anyhow.

Everyone who rides on railways is interested in the safety of the trains. The recent discussion at the meeting in New York of rail manufacturers and representatives of railroads was highly important. A perusal of the detailed report of that conference certainly is worth while.

Machine tool manufacture, which involves work of great precision, is handsomely illustrated and comprehensively discussed in the article devoted to the new plant built by the Cincinnati Milling Machine Co. Shop construction and departmental arrangement are features which will appeal to every machine shop operator.

DEATH CALLS T. G. SMITH

Former Sales Agent for Steel Interests at Buffalo Succumbs.

T. Guilford Smith, aged 72 years, former sales agent at Buffalo for the Carnegie Steel Co., the Illinois Steel Co. and the Tennessee Coal, Iron & Railroad Co., died unexpectedly at his home, 489 Delaware avenue, Buffalo, on the afternoon of Feb. 20. Death was due to hemorrhage of the brain, which followed an attack of acute indigestion the previous night.

Mr. Smith retired as sales agent of the foregoing interests of the United States Steel Corporation on Aug. 1, 1911. He continued his social activities, however, and displayed remarkable vigor for one his age. Born in Philadelphia on Aug. 27, 1839, he was a son of Mr. and Mrs. Pemberton Smith. He was graduated from the Central high school of that city with the degree of bachelor of arts and later entered the Renssalaer Polytechnic school at Troy and in 1861 was graduated from that institution with high success as civil engineer. Entering professional life, he became a member of the engineering department of the Philadelphia & Reading railroad, where, in addition to regular duties, he took post-graduate work. He was given the degree of master of arts by the Central high school of Philadelphia in 1863, and in 1865 became manager of the Philadelphia Sugar Refinery. In 1872, he was sent to Europe as an envoy of some prospective railway projects and also as a delegate to the International Prison Congress in London. The following year he was appointed secretary of the Union Iron Co. at Buffalo. In 1878 he was chosen western sales agent for the Philadelphia & Reading Coal & Iron Co. In 1883 he became a partner in the newly organized firm of Albright & Smith, which acted as sales agent for the same company in New York state and Canada. Six years later he became sales agent for Carnegie, Phipps & Co., which later was merged into the Carnegie Steel Co. It was after this that he became associated with the Steel Corporation interests.

Mr. Smith was identified with numerous influential scientific and literary societies of the country. Several degrees had been conferred upon him.

Hold Annual Meeting

The Meadville Malleable Iron Co., Meadville, Pa., declared a dividend of 3 per cent at its annual meeting which was held recently. The company plans to build several additional plants to its plant. The old board of directors was elected and the following officers chosen: President, Otto Kohler; vice president, J. E. Reynolds; treasurer, L. L. Lord. P. W. Kaufman continues as secretary of the board and general manager. The directors are C. S. Burwell, H. F. Giele, W. W. Gelvin, J. F. Downing, Charles Veith and H. C. Beman.

Industrial Railroad Hearings at Pittsburgh

Interstate Commerce Commissioner James S. Harlan has been holding hearings in Pittsburgh, for the purpose of investigating the methods of operating "industrial terminal" railroads in dealing with trunk lines, so as to make possible a discrimination of freight rates in favor of the owners of the mill terminals. Among the companies who entered appearance for the hearing were the Bethlehem Steel Co., the Cambria Steel Co., the Jones & Laughlin Steel Co., the Clinton Iron & Steel Co. of Pittsburgh, the National Tube Co. and the various roads owned and operated by these companies. The Pittsburgh & Lake Erie and the Baltimore & Ohio railroads were also represented formally.

T. GUILFORD SMITH

Will Start Mill

Max Solomon, owner of the Wheatland, Pa., rolling mill, announces that he will rehabilitate the mill and start operations in 90 days, making bar iron and later iron pipe. The plant was sold by a receiver some months ago.

REPORT SUBMITTED

By Baldwin Locomotive Works for Year Ended Dec. 31 Last.

The Baldwin Locomotive Works has issued its first annual report for the year ended Dec. 31 last. The statement is divided into two half-yearly periods, one for the six months ended June 30, before the property was acquired by the present owners, and for the six months ended Dec. 31, during which time it was under the present management.

The two half-yearly periods compare as follows:

	Six months Dec. 31, 1911.	Six months June 30, 1911.
Gross sales	$14,589,645	$14,752,940
Mfg., etc.	12,965,429	13,123,312
Mfg. profit	$1,624,216	$1,629,628
Other income	508,415	336,684
Total income	$2,132,631	$1,966,312
Int. chgs., etc.	461,212	394,241
Net profits	$1,671,419	$1,572,071
Div. pfd., 7 per cent.	700,000	.....
Div. common	200,000	.....
Total divs.	$900,000	.....
Surplus	$771,419	.....

The report says:

"Although the gross sales for the last half-year were practically equal to those for the first half-year, the profits were diminished by the expenses occasioned by the general strike of employes, which reduced the results of operation for the month of July to a deficit of $40,000. The satisfactory settlement of the strike has been most beneficial alike to the employes and to the works, by reducing the cost of operations while fully maintaining the standard of wages, and permitting the acceptance of a considerable volume of remunerative work, which could not otherwise have been executed.

"The business done by the Baldwin Locomotive Works for the six months, constituted about 75 per cent of the capacity of the plant, while that done by the Standard Steel Works Co., has been about 62 per cent of its capacity.

"The unfilled orders on the books, July 1, 1911, amounted to $10,378,338; while those on the books Dec. 31, 1911, amounted to $3,549,265. It is evident that the depression in the conditions governing uncertainties attending a year in which a presidential election occurs, are likely to lead to a reduced volume of business during the early months of 1912."

The Lexington Foundry & Machine Co., Lexington, Tenn., has been incorporated with $100,000 capital stock and has acquired the Lexington Machine Works.

PRESSED STEEL REPORTS

For Thirteenth Year, Showing Results of Backward year.

The Pressed Steel Car Co. has issued its thirteenth annual report for the year ended Dec. 31 last. The income account compares as follows:

	1911.	1910.
Gross sale	$11,331,064	$27,975,978
Net profits	892,836	1,848,366
Depreciation	.....	280,000
Balance	892,836	1,568,366
Preferred divs.	875,000	875,300
Surplus	17,836*	693,366
Prev. surplus	7,347,005	6,653,639
Total surplus	7,364,841	7,347,305

*Equal to 0.14 per cent on $12,500,000 common stock, as compared with 5.54 per cent earned on same stock previous year.

In his report President F. N. Hoffstot points out that the usual charges were not made for depreciation, as it seemed unnecessary since the plants only operated to about 25 per cent of their former capacity, and in former years under full operation, large sums were charged off for depreciation to meet just such contingencies.

It was said by President Hoffstot that up to Aug. 1, 1911, there were fewer cars ordered than in any year of which the company has record. "About this time," he said, "the prices of materials entering into car construction were considerably reduced and car builders in general in consideration of the welfare of their employes and desiring to preserve their shop organizations offered to sell cars at about cost, which resulted in a large amount of business being placed, but even with this increased activity, the total car orders placed were less than in any year since 1903.

"Your company accepted some of these orders on this low basis, but we have reason to anticipate that the volume of business will increase as during the past three years the orders for equipment have been materially below the average annual requirements and should this be the case the new business will likely be taken at a fair margin of profit."

The president said that the last of the issue of $5,000,000 notes securing a mortgage given the Morton Trust Co. in 1901, were paid off during the year, thus freeing the company from all indebtedness other than a small purchase money mortgage maturing in June, 1912, on the Allegheny works. During the year $283,572 was expended on improvements; of this amount $44,972 was spent on the passenger car department at McKees Rocks and the remainder on the Allegheny plant in rebuilding the original pressing department. The volume of business turned out by the passenger car department during the year was almost as great as the previous year. The construction of the new steel car shop at the plant at Hegewisch, Ill., was commenced during the year and will be completed early this year.

EXTENSIVE ADDITIONS

Contemplated by Otis Steel Co.—Would Make Land in Lake.

The Otis Steel Co., Cleveland, which recently incorporated under the laws of Ohio after having operated for years under an English charter, has filed an application at the United States engineer's office, Cleveland, for permission to reclaim a portion of the lake shore immediately fronting its plant at the foot of East Thirty-third street. It is proposed to make land to a point 2,000 feet from the breakwater, thus securing an area about 1,300 feet square. On this land it is proposed to erect a steel works comprising three blast furnaces, 12 open-hearth furnaces, blooming mills, etc. An ore yard, 225 x 1,250 feet, to be provided with two ore bridges, is to be located at the front of the site, these bridges to command vessels moored at the dock. The application will be considered at a public hearing to be held at room 417, Federal building, at 10:30 a. m., March 1. The company is very much cramped at its present site and recently considered a plan to move to "the flats" in Cleveland, near the plant of the Cleveland Furnace Co.

May Move Offices.—The Aluminum Co. of America has under consideration the removal of its offices, now located at New Kensington, Pa., to Pittsburgh. The company's sales department has always been in Pittsburgh, and it is believed that the location of the general offices in the city would prove more advantageous than in the out-lying borough.

Hold Monthly Meeting. — The monthly meeting of the Pittsburgh Foundrymen's Association will be held at the Engineers' Society of Western Pennsylvania on Monday evening, March 4. David McClain, of the Milwaukee Correspondence Schools, is to present a paper on "Mixing Iron for Cupola Practice."

The Nichols & Shepard Co., Battle Creek, Mich., manufacturer of gray iron castings, expects to let a contract this spring for the erection of a foundry, 90 x 305 feet. Estimated cost $70,000.

CRESSON MEDAL

Awarded to Eminent Scientists by the Franklin Institute.

The Franklin Institute, acting through its committee on science and the arts, recently awarded the Elliott Cresson gold medal, the highest in the gift of the institute, to the following gentlemen:

Alexander Graham Bell, Sc. D., Ph. D., LL. D., of Washington, D. C., in recognition of the value of his solution of the problem of the electrical transmission of articulate speech.

Samuel Wesley Stratton, D. Eng., Sc. D., of Washington, D. C., in recognition of his distinguished and directive work in physical science and metrology, and its application in the arts and industries.

Albert A. Michelson, Sc. D., Ph. D., LL. D., of Chicago, in recognition of his original and fruitful investigations in the field of physical optics.

Alfred Noble, C. E., LL. D., of New York, in recognition of his distinguished achievements in the field of civil engineering.

Elihu Thomson, Sc. D., Ph. D., of Swampscott, Mass., in recognition of his leading and distinguished work in the industrial applications of electricity.

Edward Williams Morley, Sc. D., Ph. D., LL. D., of West Hartford, Conn., in recognition of his important contributions to chemical science and particularly of his accurate determinations of fundamental magnitudes.

Johann Friedrich Adolph Von Baeyer, Ph. D., F. M. R. S., of Munich, Germany, in recognition of the many important results of his extended research in organic chemistry and of his discovery of synthetic processes of great industrial value.

Sir William Crookes, D. Sc., LL. D., F. R. S., O. M., of London, England, in recognition of his important discoveries in inorganic and analytical chemistry and of his pioneer work on the discharge of electricity through gases.

Sir Henry Enfield Roscoe, Ph. D., LL. D., D. C. L., F. R. S., of London, England, in recognition of his extended and important researches in the domains of inorganic, physical and industrial chemistry.

The rebuilding of four stoves and the relining of the stack at the East furnace of the Columbus Iron & Steel Co., Columbus, O., has been completed. The work was done by the P. J. Brown Construction Co., Cleveland.

Personals

W. L. Saunders, president of the Ingersoll-Rand Co., has returned from a trip around the world.

F. H. Brown, formerly of Detroit, has accepted a position with the W. P. Davis Machine Co., Rochester, N. Y.

L. C. Middough, secretary of the Osborn Engineering Co., Cleveland, is expected to return about March 2, from a visit in Florida.

Howard W. Evans has been appointed general manager of the sales department of the Best Mfg. Co., Pittsburgh.

W. S. Pilling, of Pilling & Crane, Philadelphia, will leave this week for a four weeks' stay at Nassau, Bahama Islands.

George Langen, works manager of the Cincinnati Planer Co., Cincinnati, sails on March 19, for an extended business trip in Europe.

H. H. Wall has been transferred from the Cleveland office of Joseph T. Ryerson & Son to the advertising department of the Chicago office.

L. H. Mesker, recently connected with the Cleveland office of Manning, Maxwell & Moore, Inc., has been appointed manager of the St. Louis branch, succeeding C. L. Lyle.

Peter A. Connelly, secretary of the Perfection Spring Co., Cleveland, who recently underwent an operation, is making a good recovery and will be out of the hospital in two weeks.

Coleman B. Ross, formerly with the Linde Air Products Co., Buffalo, has accepted a position with the Independent Pneumatic Tool Co., Chicago, with office in Pittsburgh.

Hugh Jackson, treasurer of the Positive Clutch & Pulley Works, Ltd., Toronto, has resigned to accept the cashiership of the Canadian Fairbanks-Morse Co., Ltd., at Calgary.

O. W. Youngquist has been chosen manager of the Chicago office of Hubbard & Co., Pittsburgh. For a number of years he has been with the H. Channon Co. as railway sales manager.

Joseph McDonald, who recently resigned as superintendent of the Ohio works of the Carnegie Steel Co., at Youngstown, O., has been presented a gold watch by employes of the Carnegie mills in that city.

Charles Booth has been appointed district manager of the Chicago Pneumatic Tool Co.'s New England territory, with headquarters at 191 High street, Boston. He has been with the company since its organization.

F. William Hausman, for six years chief mechanical engineer for the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., has resigned his position and will engage in mechanical engineering for himself in the Birmingham district, it is said.

George A. Post Jr. has been appointed western sales manager of the Standard Coupler Co., New York, with office in Chicago, succeeding Charles D. Jenks, who resigned to enter another business. For the past year Mr. Post has been sales manager of the company.

J. M. Taylor has been named secretary of the National Founders' Association, succeeding F. W. Hutchings, who resigned recently. Mr. Taylor has been with the association about 12 years, the past eight of which he has been eastern representative, with headquarters in New York.

William B. Hall, superintendent of equipment of the Mather Horse & Stock Car Co., Chicago, has been made vice president and general manager of the Illinois Car & Mfg. Co., and the Illinois Bolt, Nut & Forging Co., both of Chicago. His office is in the Great Northern building in that city.

James A. Campbell, of the Youngstown Sheet & Tube Co., and Joseph G. Butler Jr., of the Brier Hill Steel Co., Youngstown, O., who testified before the Penrose committee, were assured while in Washington that the Republican national campaign opening of President Taft will be held in Youngstown in the event that the president is renominated.

W. S. Chase, general sales manager of the National Acme Mfg. Co., and Oliver L. Henn, demonstrator in the sales department of the company, and a son of E. C. Henn, vice president and general manager, left on Feb. 24, for a three months' trip to England, Germany, Austria, Italy and France, where they will visit agencies which the company has established.

A. L. Hopkins has been appointed vice president of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., being promoted from the position of general manager. His headquarters will be at 30 Church street, New York. H. L. Ferguson becomes general manager. The changes were occasioned by the recent death of Walter A. Post, president of the company. The office of president will not be filled for the present.

State Senator David Tod and H. H. Stambaugh, of the Brier Hill Steel Co., Youngstown, O., accompanied by Mrs. Tod and Silas Shook, sailed, last Saturday, for a tour of the West Indies, including a visit to Panama. Before leaving Youngstown, Senator Tod reiterated a recent statement that he will not be a candidate for the Republican nomination for governor this year or for any other office. Friends, however, are trying to induce him to run for congress.

Walter S. Burchinal, secretary of Trimble, Mudge & Co., Pittsburgh, has again taken charge of the Buffalo district, and the operation of the company's scrap yard at Lackawanna, (South Buffalo) which is the largest yard in this section.

Irving H. Reynolds, for the past seven years vice president and general manager of the William Tod Co., Youngstown, O., will retire to take up engineering work. Prior to his connection with the Tod company, Mr. Reynolds was for many years identified with the engineering and management of the Edward P. Allis Co., now the Allis-Chalmers Co., Milwaukee.

John Birkinbine, Philadelphia, a member of the American Institute of mining engineers and Franklin institute, delivered an address on "Our Neighbor, Mexico", before the Up-to-Date Club, Youngstown, O., on the evening of Friday, Feb. 23, and on the following evening delivered an address on "The Story of Iron", under the auspices of the Mahoning County Historical Society of the same city.

Assemblyman Gillett, of New York, has introduced a bill in the legislature amending the public service commission law. It includes within the definition of common carrier all corporations operating steam vessels upon non-tidal waters lying wholly within the state. Corporations described would be placed under the jurisdiction of the commissions as to rates, safety and adequacy of service.

The Bucyrus Co., South Milwaukee, Wis., has opened an office at Duluth, Minn., under the management of E. C. Hingstown. He will have general charge of the sale of steam shovels, dredges, drag line excavators and the company's other products in the locality of Duluth and the iron ranges. Carl Horix has been made central sales manager of the company and will be in charge of the new Chicago office, 622 McCormick building.

J. C. Maben, president of the Sloss-Sheffield Iron Co., has just returned to New York from the company's property in Birmingham. He says conditions in the southern iron district are quiet and that many of the manufacturers have sold the greater part of their stock of iron. Consequently, he believes the market will be held at about present quotations. He is of the opinion that after the passing of the presidential election trade will be set moving again, but not before.

Recent Improvements in Designs of Large Presses

Developments in the Construction of Presses of Various Types and for Different Classes of Work

During the past few years extensive improvements have been made in the design and construction of multiple crank presses and at the present time there are many installations of large presses equipped with three or four cranks and with a distance of from 10 to 16 feet between housings. In the accompanying illustrations are shown several types of these machines that have been built recently by the E. W. Bliss Co., Brooklyn, N. Y.

The presses shown in Figs. 1, 2, 4 and 6 are of the straight side, tie rod type in which the bed and crown are separate castings. The side housings are of box section through which steel rods extend. The tie rods take off all the strain, the housings merely serving as a guide for the slide.

In Fig. 1 is shown a medium size double crank press, double-geared with a ratio of 27 to 1. The distance between housings is 6 feet and the slide, which has a movement of 12 inches, is arranged for a crossbar knockout. The press is driven and controlled by a powerful combined friction clutch and brake equipped for hand control. The flywheel is 50 inches in diameter, has a 7-inch face and weighs 1,300 pounds. The total weight of the press is 50,000 pounds.

A double crank press of large capacity, is illustrated in Fig. 3. The distance between housings is 8 feet, the crank shaft is 10 inches in diameter and the press has a 14-inch stroke. This type is also built with twin-drive and has a ratio of gearing of 36 to 1. The flywheel is 56 x 7½ inches and weight 1,900 pounds. The press complete weighs 110,000 pounds. From two to four men are usually required to operate a press of this size and one or more of the workmen are stationed in the back of the press to handle the work. This is a very dangerous position, particularly when the gearing is arranged so as to endanger the operator. On all of the large presses built by the E. W. Bliss Co. the gearing is mounted on the housings above the crankshaft, as illustrated in Fig. 4. This arrangement places the driving shaft and gearing above the operator's head and leaves the press entirely free from dangerous operating parts on all sides.

Fig. 2 illustrates a triple-crank press, double-geared with a ratio of 24 to 1. This machine is 11 feet between housings and the slide movement is 4 inches. Owing to its great weight it is built with twin-drive, a gear being provided on either end of the crankshaft. This method of driving reduces the torsional strain on the crankshaft and equalizes the pressure on the journals and gears. The press is driven by a hand-controlled friction clutch. The flywheel is 40 inches in diameter and has a 6-inch face. The total weight of the machine is 59,000 pounds.

The presses shown in Figs. 1, 2, 4 and 6 are of the same general type and are used for blanking, forming and drawing operations on steel range bodies, automobile parts and similar work. These presses have openings through the housings so that long bars can be passed through the machine when necessary.

Fig. 3 shows a press of exceedingly novel design. The distance between the housings is 6 feet and the press is equipped with an 8-inch crankshaft with 6-inch stroke. The gearing, which is arranged similar to that of the press shown in Fig. 4, has a ratio of 22 to 1. The flywheel is 50 x 7 inches weighs 1,300 pounds and the weight of the entire machine is 63,000 pounds This press is a combination of the

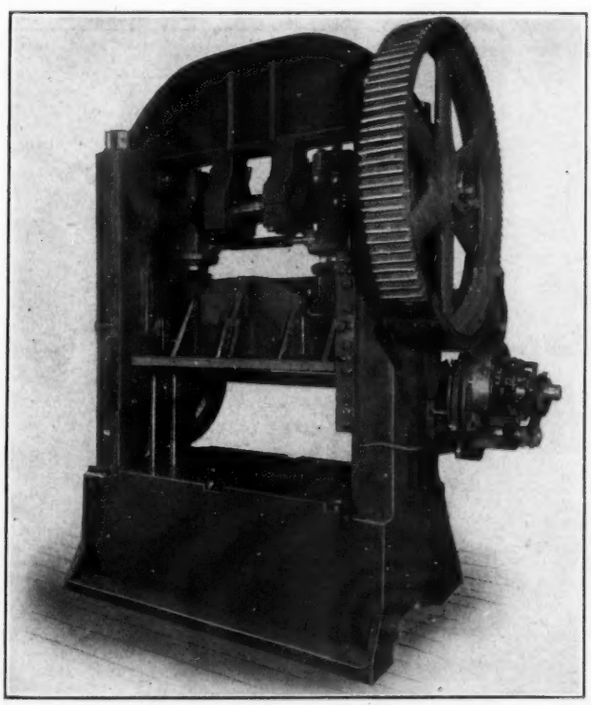


FIG. 1—MEDIUM SIZE, DOUBLE-CRANK PRESS

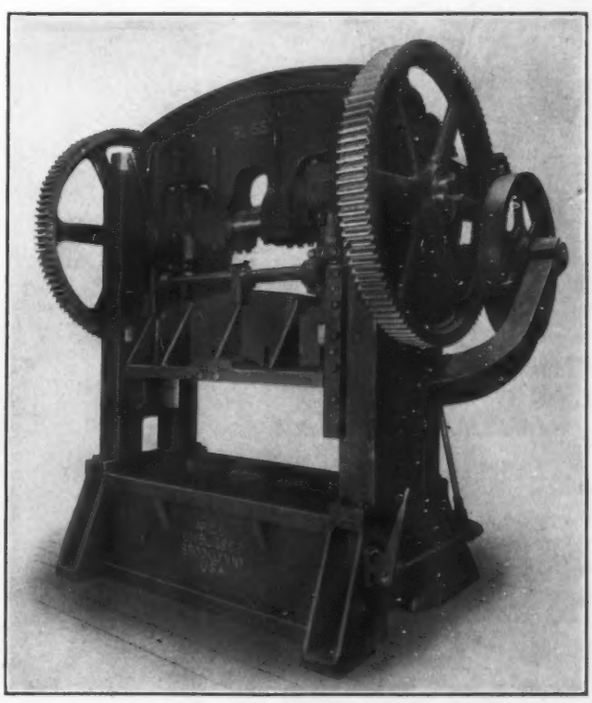


FIG. 2—DOUBLE-CRANK PRESS OF LARGE CAPACITY

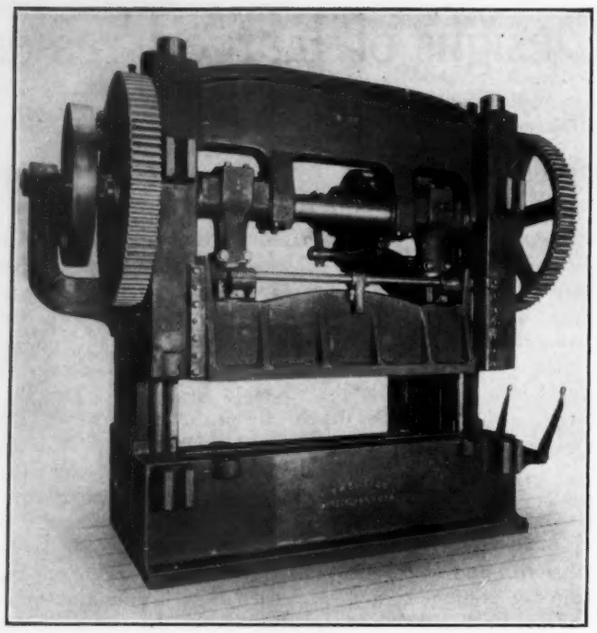


FIG. 3—PRESS WHICH IS A COMBINATION OF THE TIE ROD AND GAP FRAME TYPE

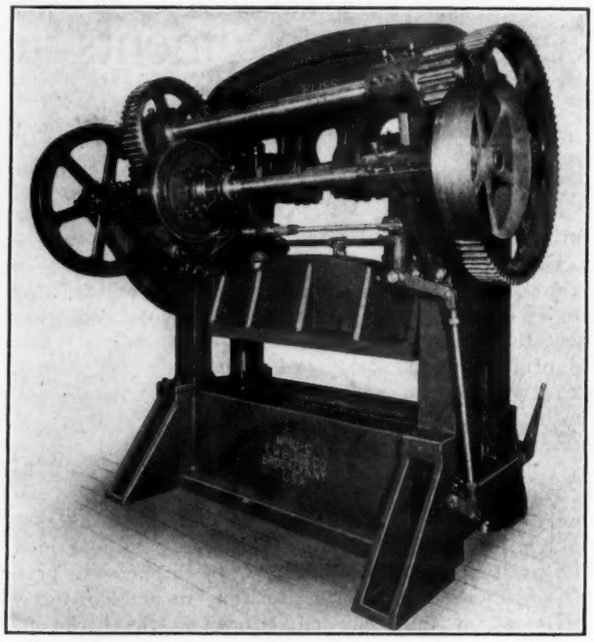


FIG. 4—PRESS WITH GEAR ON HOUSINGS ABOVE CRANKSHAFT

tie rod and gap frame type. The bed and crown are separate castings and the steel housings are of the gap type and box section. The two large steel rods which hold the bed and crown in place pass through the housings back of the crankshaft, relieving the housings of all strain. The two smaller steel rods in front of the crankshaft do not extend below the gap and have only been provided to prevent the crown from rolling. Two additional steel rods extend through the bed and prevent the housings from springing away from the bed at the back.

In Fig. 5 is illustrated a four-crank press, and while it is of comparatively small capacity, it is extremely wide. The machine is of the built-up frame type with gap or overhanging housings. The distance between housings is 14 feet and it is equipped with a 4-inch crankshaft with 2-inch stroke. A twin-drive is provided and the ratio of gearing is 15 to 1. The flywheel is 36 x 5½ inches and weighs 600 pounds. The weight of the machine complete is 25,000 pounds.

Vanadium in Tool Steel

The February issue of *American Vanadium Facts*, published by the American Vanadium Co., Pittsburgh, contains an interesting article entitled "The Development of Vanadium High-Speed Tool Steel." It is stated that the first vanadium was only added to high-speed steel in amounts of 0.2 to 0.3 per cent, but it was found that larger percentages produced still better results and as much as 0.75 to 1 per cent is now generally used. The results of the use of vanadium high-speed steel by the Vanadium Alloys Steel Co., Latrobe, Pa., are also published. The practice of this company indicates that the increase in efficiency may be stated either in the relative speed at which the tools will last a specific time, or in the relative length of time the tools, under test, and under similar conditions, will cut without resharpening. The results show that 0.3 per cent of vanadium permits a 10 per cent increase in speed, or the removal of 10 per cent more metal in the same period; 0.6 per cent of vanadium permits of 20 per cent increased speed, and 0.9 per cent of vanadium permits of an increased speed of 30 per cent. Stating the effect in terms of increased time between grindings, 0.3 per cent of vanadium doubles the time between grindings; 0.6 per cent quadruples the time, and 0.9 per cent of vanadium cuts eight times as much metal between grindings if the same speed and feed are employed in each operation.

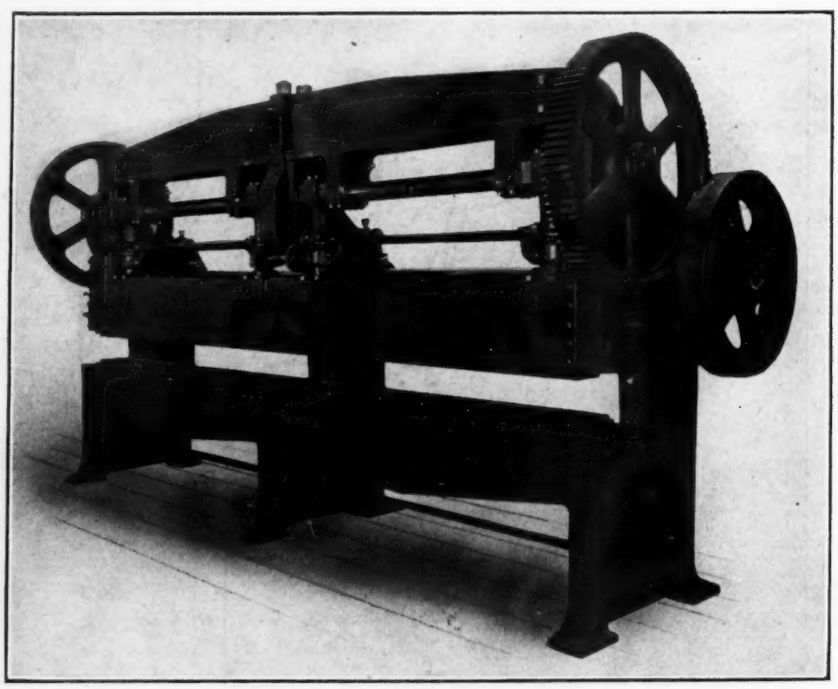


FIG. 5—FOUR-CRANK PRESS; DISTANCE BETWEEN HOUSTINGS 14 FEET

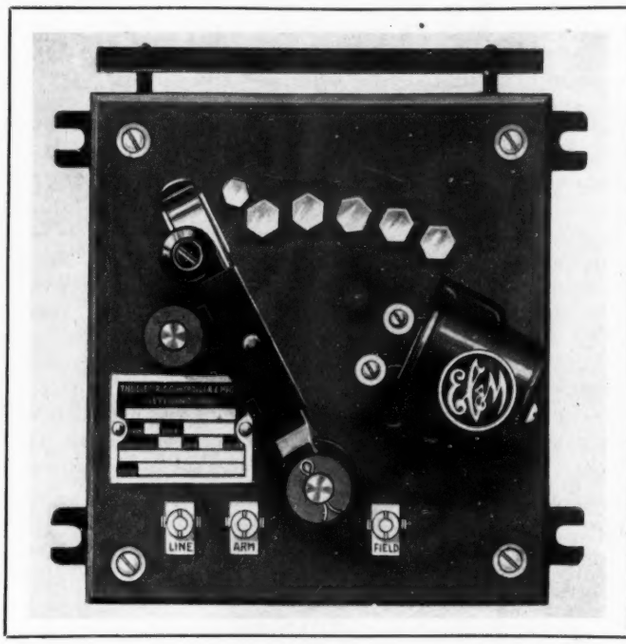


FIG. 1—STARTING RHEOSTAT FOR SMALL MOTORS

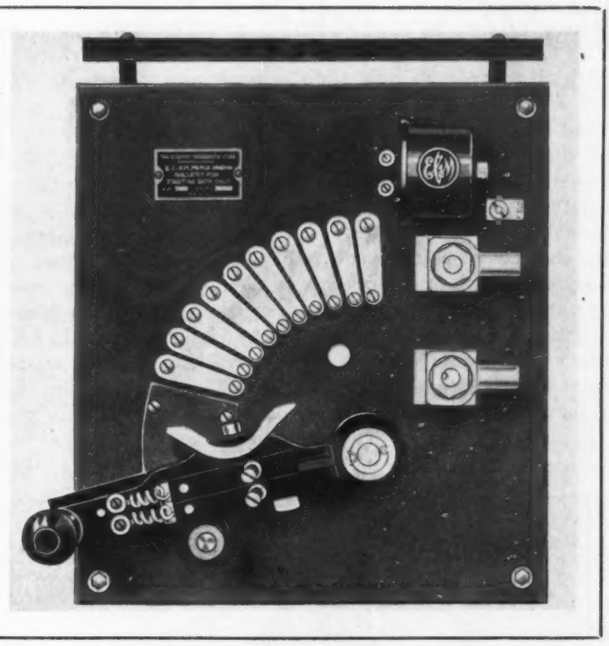


FIG. 2—STARTING RHEOSTAT FOR LARGE MOTORS

Starting Rheostats

The Electric Controller & Mfg. Co., Cleveland, is now manufacturing a new line of starting rheostats for series, shunt or compound-wound, direct-current motors. The panel is made of Monson slate with beveled edges and an oil finish. The contacts on all sizes are removable from the front of the rheostat without disassembling or interfering with the wiring or resistance. The retaining magnet is iron-clad and is well protected from mechanical injury. The capacity of the resistance wire is liberally proportioned. This wire is wound on asbestos-covered metallic tubes, through which a draft of air flows. While this draft conveys the heat away from the resistance, at no time does it touch the hot resistance wire. The obvious result is that this wire is unusually free from oxidation. These starting rheostats are regularly furnished in sizes from one-fourth to 50 horsepower, 220 and 550 volts. In Fig. 1 is shown a starter for motors up to and including 7½ horsepower, 110 volts; 15 horsepower, 220 volts, and 20 horsepower, 550 volts. For larger sizes the starter shown in Fig 2 is employed.

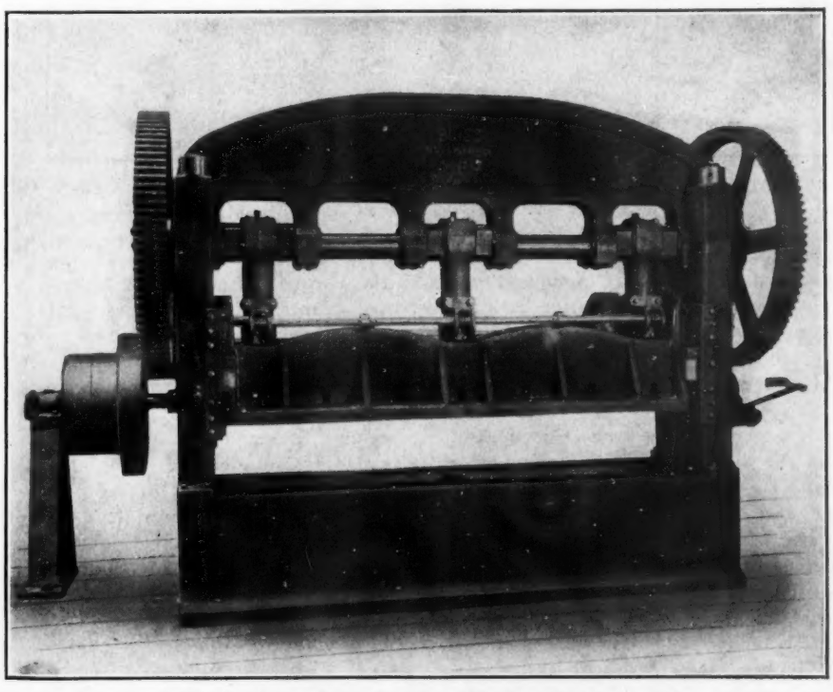


FIG. 6—DOUBLE-GEARED, TRIPLE-CRANK PRESS

Brass Founders' Association

At a recent meeting of the executive committee of the American Brass Founders' Association, held in Buffalo, Secretary W. M. Corse presented a report on the co-operative work contemplated by the United States bureau of standards and bureau of mines with the association. Prof. Charles L. Parsons, chief mineral chemist of the bureau of mines, attended the meeting and stated that the investigation of problems connected with the manufacture of non-ferrous alloys would be undertaken. A committee consisting of G. H. Clamer, chairman; Harvey J. Skinner and Jesse L. Jones was appointed to co-operate with the bureau of standards and another committee consisting of H. W. Gillett, E. B. Horne and I. M. Bregosski will co-operate with the bureau of mines.

The Anderson Oil Co., Buffalo, has been incorporated with $25,000 capital to engage in the manufacture of high grade core oils and foundry supplies. The incorporators of the company are C. M. Anderson, formerly with the National Core Oil Co., Buffalo, and Harry H. Hoover, previously associated with the T. J. Peterson Co., Chicago. A manufacturing building, 162 x 175 feet, located at Swan street and the New York Central railroad main line, has been obtained. A railroad siding extends into the yard of this plant.

All-Geared, 26-inch Sliding Head Drill

An all-geared, 26-inch sliding head drill, similar in design to the all-geared drills built by the Barnes Drill Co., Rockford, Ill., but which, in addition, is equipped with a sliding head, is illustrated in Figs. 1 and 2. This machine has the power of the ordinary 36-inch, cone belt-driven drill, but occupies less floor space and is conveniently arranged for ease and speed of manipulation. The eight geared speeds and feeds are all under instant control from the front of the machine and the feeds range from 0.005 to 0.086 inch. The spindle is double-splined, 1 15-16 inches in diameter, while the sleeve has a 14-inch travel, the drift hole being below the sleeve. The crown and pinion gears are cut four-pitch and are of extra large diameter. The head and spindle are counter-balanced, the weight being suspended by a roller bearing sheave wheel. The head is gibbed to the column face, insuring perfect alignment, and is held at any point within the long travel by two quick-acting clamp screws. The head is raised and lowered by a crank pinion operating in a rack. This has proved an exceedingly desirable feature for boring bar and deep hole work.

This drilling machine is guaranteed to drive a 2-inch high-speed drill at 0.041 inch feed per revolution of spindle, or at the rate of 6½ inches per minute in cast iron without the back gears. It will also drive a 1-inch high-speed twist drill at the rate of 13½ inches per minute in cast iron. The drill illustrated in Fig. 1 is equipped for pulley drive, the tight and loose pulleys being 12 x 5 inches and the speed 325 revolutions per minute. The machine shown in Fig. 2 is motor-driven and is provided with special boring bar equipment for boring, sizing and reaming exhauster bodies for vacuum cleaners. The borers in these exhauster bodies are 6 inches in diameter and 6½ inches deep. The boring heads are equipped with pilot bars. The same machine is used for boring bearings shown at *A*, Fig. 2, the small cutter bars and reamers on the base being employed for this purpose. While this machine is guaranteed for driving 2-inch high-speed drills at the rate of 6½ inches per minute in cast iron without the back gears, in a number of tests this drill has been driven at the rate of 8¼ inches.

The height of the drill is 92½ inches and the distance from the face of the column to the center of the table, 12 inches; the table diameter is 23 inches and its vertical travel, 20 inches; the travel of the sliding head is 23 inches and the greatest distance from the spindle to the base, 54 inches; the ratio of the back gearing is 4 to 1, and the weight of the machine 1,750 pounds.

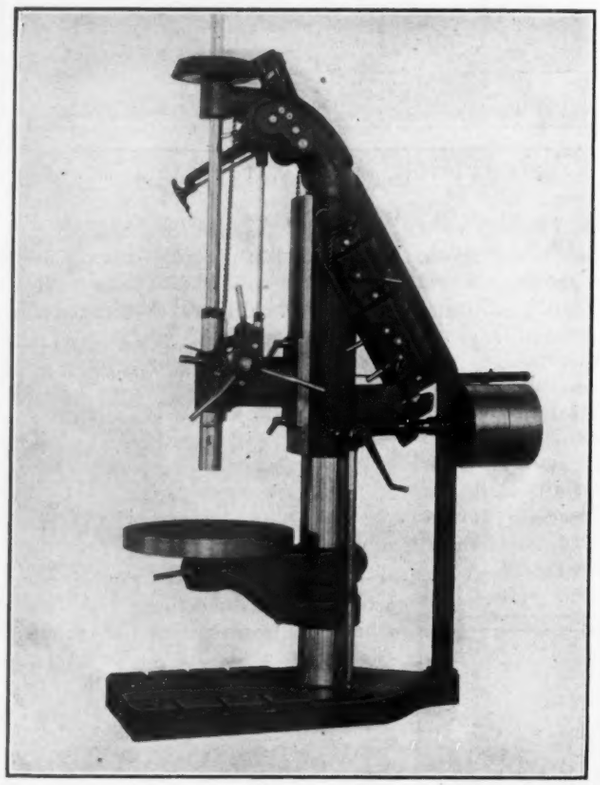


FIG. 1—ALL-GEARED, 26-INCH SLIDING HEAD DRILL

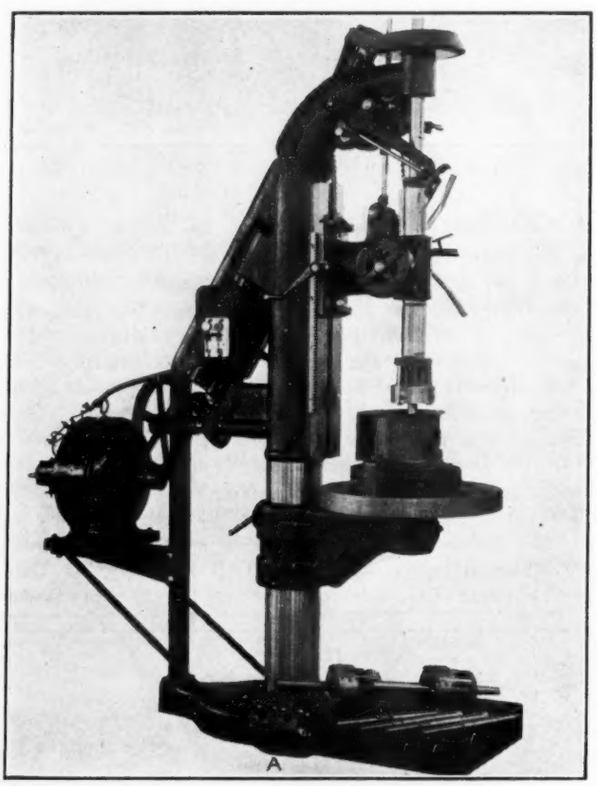


FIG. 2—MOTOR-DRIVEN SLIDING HEAD DRILL PROVIDED WITH BORING BAR EQUIPMENT

Book Review

Engineering Directory for 1912; 1,496, 4 x 6½-inch pages; published by The Crawford Publishing Co., Chicago, and furnished by THE IRON TRADE REVIEW, Cleveland, for $5, postpaid.

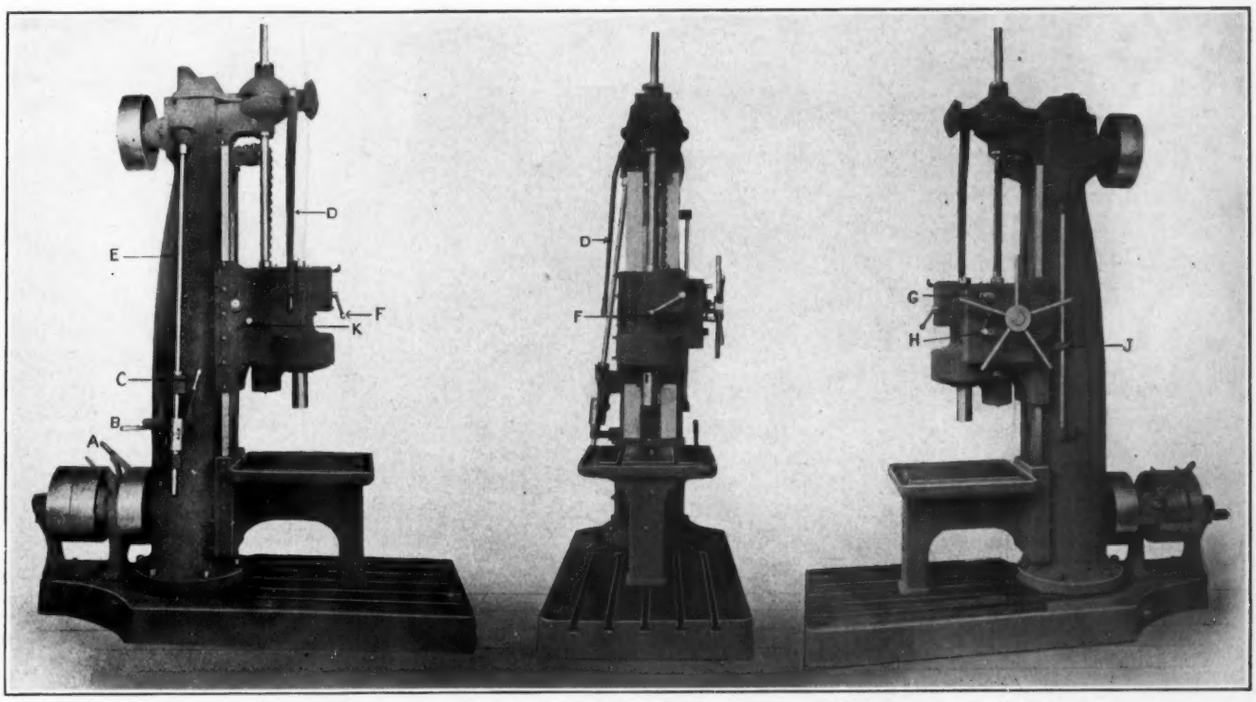
This directory contains a complete list of jobbers of hardware and electrical supplies, a list of manufacturers' agents and an alphabetical list of manufacturers of plumbing, heating and mill supplies, railway purchasing agents, leading architects of the United States, electric light and power plants, gas companies, waterworks, trade associations and a cross index to manufactured products. A list of jobbers of mill, plumbing and heating supplies and dealers in plumbing, steam and mill supplies in Canada is also included. The directory contains the names of more than 6,000 manufacturers, producing over 4,000 varieties of engineering goods, which have more than 50,000 trade or brand names.

The Quincy Mining Co. has declared a regular quarterly dividend of $1 per share, payable March 25.

A New Boring Machine for Extra Heavy Work

This Tool is An Example of the Tendency Toward All Gear Drive and High Power in Machine Tool Design

A new boring machine especially adapted for extra heavy boring, drilling and tapping has been recently placed on the market by the Western Machine Tool Works, Holland, Mich. This tool, for which Hill, Clarke & Co., have the agency, illustrates in an interesting manner the modern tendency toward all gear drive and high power in machine tool design. The machine is designed to drive 4-inch drills in steel and to pull an 8-inch pipe tap in cast iron.



FIGS. 1, 2 AND 3—SIDE AND FRONT VIEWS OF BORING MACHINE

Figs. 1, 2 and 3 show three views of this machine. The spindle is fixed, the head mechanism being fed down automatically on the column. The machine is equipped with nine feed changes, ranging from 0.006 to 0.042 inch per revolution of the spindle; there are also three positive geared leads for tapping, 8, 11½ and 14 threads per inch. The tapping leads are independent of the nine feed changes and any other tapping leads may be obtained by means of extra change gears, Fig. 4.

The countershaft on the base is belted to the quick change speed gear box on the top of the column. It carries tight and loose pulleys 16 inches in diameter, with 5-inch faces, and runs at a constant speed of 400 revolutions per minute. In the speed change gear box are eight different spindle speeds which are doubled in the head by means of back gears, making 16 spindle speeds in all, ranging from 25 to 400 revolutions per minute. From the gear box, the power is transmitted to the head proper and then to a set of three bevel gears and a friction clutch, which form the reverse mechanism for tapping. The lever for operating this friction clutch is located on the left hand side of the head, as shown at *D*, Fig. 1.

The spindle is driven by a large gear located in a fixed position at its lower end. This arrangement reduces the torsional strains on the spindle and stiffens it, thus reducing the chatter often present when taking heavy cuts.

The automatic down feed to the head on the column is driven from a spiral gear located near the upper end of the spindle. From here it goes through the quick change feed gears to a spur gear which meshes with a rack cut in the face of the column. This arrangement necessitates the feed operating strictly in conjunction with the spindle movements; the spindle does not move down through the head, but the whole head moves carrying the spindle with it.

Figs. 5 and 6 show the construction of the quick change gear box placed on the top of the column. A constant speed shaft, *A*, is keyed to the pulley whch in turn is belted to the countershaft. A cone of four gears is splined to shaft, *A*, and may be shifted thereon by means of the fork, *C*, Fig. 6, which slides on a fixed stud in the gear casing. A rack is secured on the rear of the fork, engaging a gear, *D*, keyed to the vertical shaft, *E*, so that the rotation of the latter shifts the cone gear, *B*. The shaft to which the variable speed is transmitted is shown at *F*. On this is mounted the rocker arm, *G*, having two pivots, *H*, supporting two intermediate gears, *J*. The latter are directly geared to the pinion shaft, *F*. On the upper part of rod, *E*, is cut a circular rack, the teeth of which engage corresponding gear teeth in the sector face of the rocker arm, *G*. The rod, *E*, may be raised or lowered and rotated to right or left. Raising or

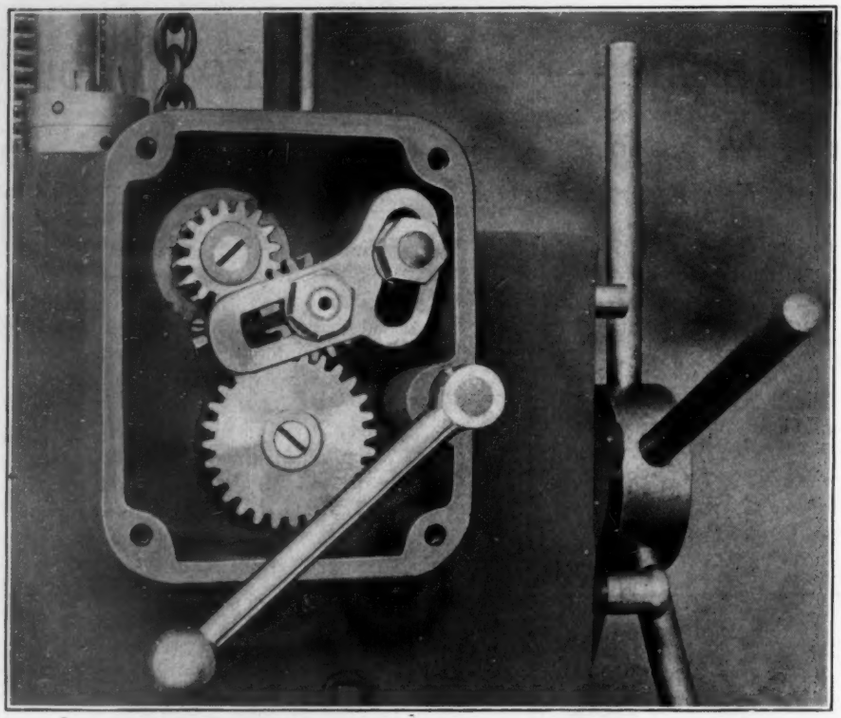


FIG. 4—EXTRA CHANGE GEARS

lowering the rod rocks the arm, *G*, and permits either of the intermediate gears, *J*, to mesh with the corresponding gear on shaft, *A*; rotating *E* to the right or left, shifts the cone, *B*, on shaft, *A*, to bring any one of the four gears into position to engage either of the intermediate gears, *J*.

As illustrated in Fig. 1, a drum is mounted on the lower end of rod, *E*, and the raising or lowering and rotating of this drum is accomplished by means of the two levers, *B* and *C*, at the side of the column. Eight changes of spindle speeds are thus provided by a very simple mechanism, with no possibility of interference or false moves.

The details of the spindle drive, showing the direct geared drive and back geared drive to the spindle, are shown in Fig. 7. The shaft, *P*, which is driven from the gear box on the top of the column, carries the gears, *B* and *X*, while the spindle proper carries the mating gears, *V* and *Z*. Gear, *B*, is splined to the shaft, *P*, and when in the position shown, gives a back geared drive to the spindle. When changing to direct geared drive, gear, *B*, may be dropped down inside the gear, *X*, which has been bored out to receive it. The gear, *X*, has a large hub on the lower side, and on the inside of this hub is cut a two-jaw clutch. Engagement is made with this two-jaw clutch by a corresponding clutch cut on the hub of gear, *B*. Thus, when the clutch is engaged, *B* no longer meshes with *V* and the drive is direct from *X* to *Z*. The spindle is 3½ inches in diameter, forged and fitted with ball thrust bearings. The gear, *Y*, is 12 inches in diameter, with a 2½-inch face, and 4 diametral pitch.

In Figs. 8 and 9 are shown the details of the positive geared feed mechanism. It will be noted that the power is taken from the spindle by means of the spiral gear on shaft, *C*, Fig. 9, and is transmitted through the three spur gears in the small box on the front of the head to shaft, *D*. The gears in this box are changed for obtaining different tapping leads and in changing from one lead to another it is only necessary to take off one gear and put on another.

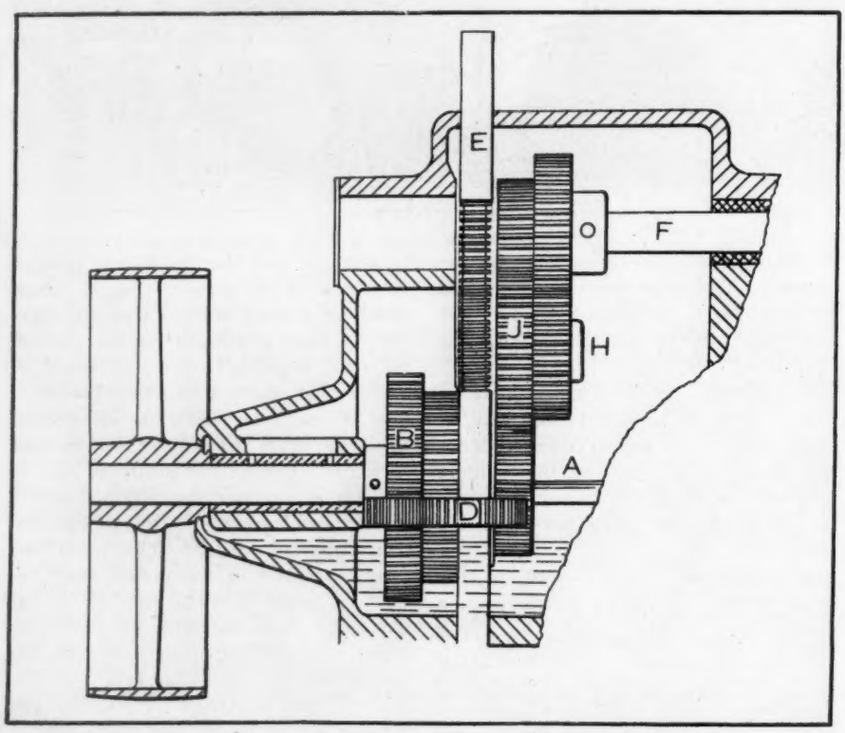


FIG. 5—CROSS-SECTION OF QUICK CHANGE GEAR BOX

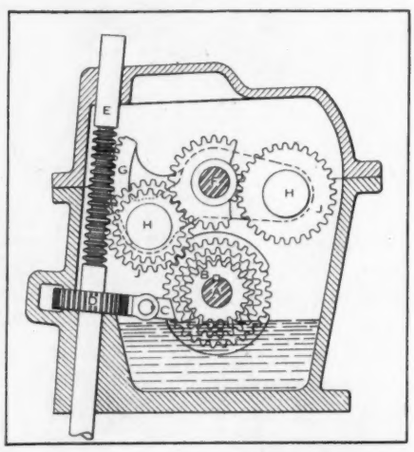


FIG. 6—QUICK CHANGE GEAR BOX

Shaft, *D*, carries five gears, all of which run loose upon the shaft, except *X*, which is keyed solid. The two gears to the left on shaft, *D*, are locked solid together and any one of these three middle gears may in turn be keyed to the shaft, *D*, by means of a drive key mechanism. This drive key is operated by the upper lever on the right hand side of the head, designated as *G*, Fig. 3.

Above these three middle gears is a cone of mating gears, running loose upon shaft, all of which are joined together. Shaft, *F*, Fig. 9, carries three

gears, the one to the extreme right being keyed solid to the shaft. Gear, *Y*, runs loose on the shaft, while gear, *Z*, has a positive clutch formed to the hub and is splined to the shaft. Gear, *Z*, drives shaft, *F*, from gear, *X*, when tapping is done, while the drive is from *X* to *Y*, when the regular spindle feeds are desired.

From shaft, *F*, the drive goes to the worm gear by means of a spur gear on shaft, *J*. The worm is hung in a segment pivoted around shaft, *J*, so that it can be raised into mesh with the worm wheel by means of the lever, *F*, Fig. 1. When the worm is raised into mesh, a spring presses a finger, *M* Fig. 8, under the worm bracket and holds it securely in position.

From the worm wheel, the feed is transmitted through the three spur gears, shown in Fig. 9, to a rack

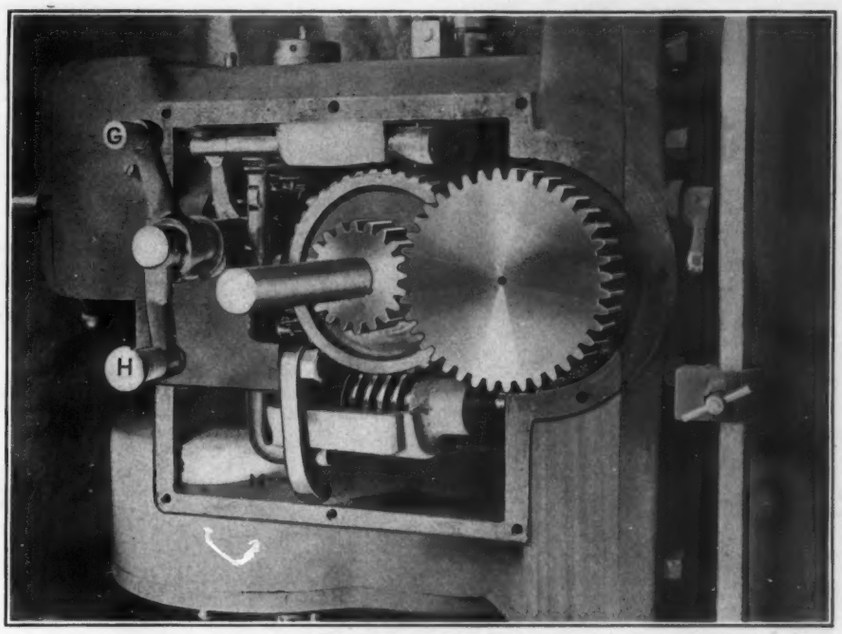


FIG. 8—GEARED FEED MECHANISM

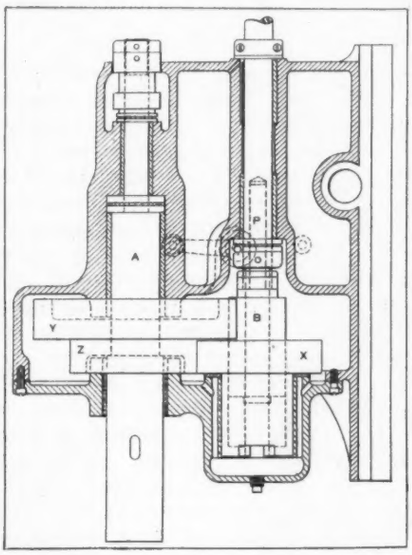


FIG. 7—DETAILS OF SPINDLE DRIVE

secured to the face of the column, causing the head to be raised or lowered automatically. An adjustable automatic stop is provided on the side of the column by means of which the down feed to the head may be tripped out.

The design of this machine is extremely rugged and rigid throughout. The construction of the column is of special interest. Its cross-sectional area increases from the top downward, because as the head is raised, the bending stresses at the base of the column are increased. The column is cast in the form of a cored box instead of being turned, and is, therefore, very rigid.

By means of the long lever, *D*, Fig. 1, the tap may be fed down with a geared positive lead, reversed and positively fed out. This entirely eliminates the dragging of the tap when being backed out and thus roughing up the threads.

On the under side of the table, below the center of the spindle, a hub is bored out and heavily ribbed on the outer edges. If a boring operation, like an open end cylinder job, is to be performed all that is necessary is to drill and bore out a hole through the table into this hub and insert a bushing. The boring bar can be run through and steadied in this bearing. In this manner a support to both ends of the boring bar is obtained. The cutter will then feed down through the work with accuracy of alignment and freedom from spring and chatter.

The lubrication of this machine is automatic throughout. All gears in the head and quick change gears dip in a bath of oil, the head alone holding seven gallons of lubricant. The bearings are made self-oiling by laying a wick in a slot milled out of the bearing, the ends of the wick dipping into a reservoir of oil. The same is true of the loose pulleys on the countershaft. The reservoirs hold enough oil to last for several months with the machine in constant service.

The automatic down feed to the head on the column is 40 inches; the diameter of the column, front to back, is 18 inches and the size of base 40 x 90 inches. The machine weighs about 8,500 pounds.

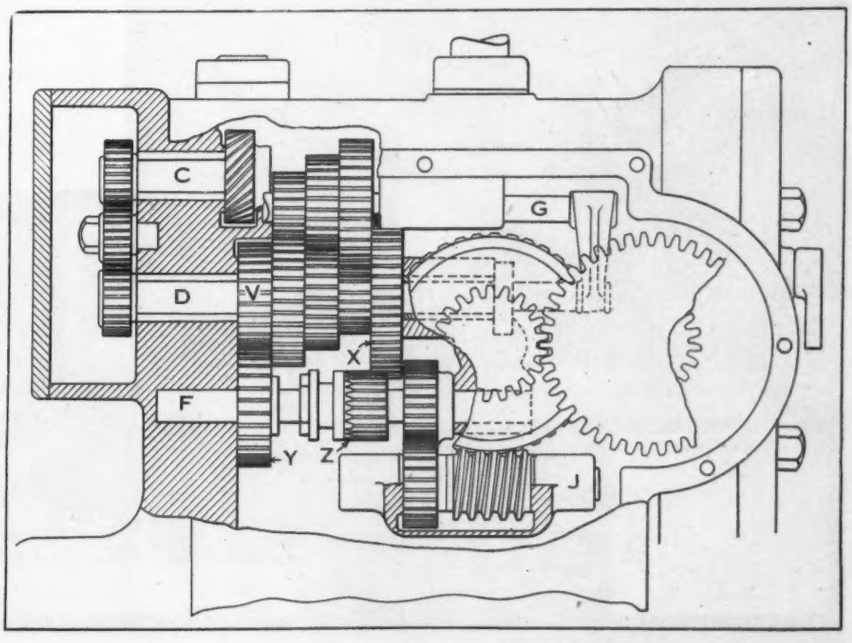


FIG. 9—DETAILS OF FEED MECHANISM

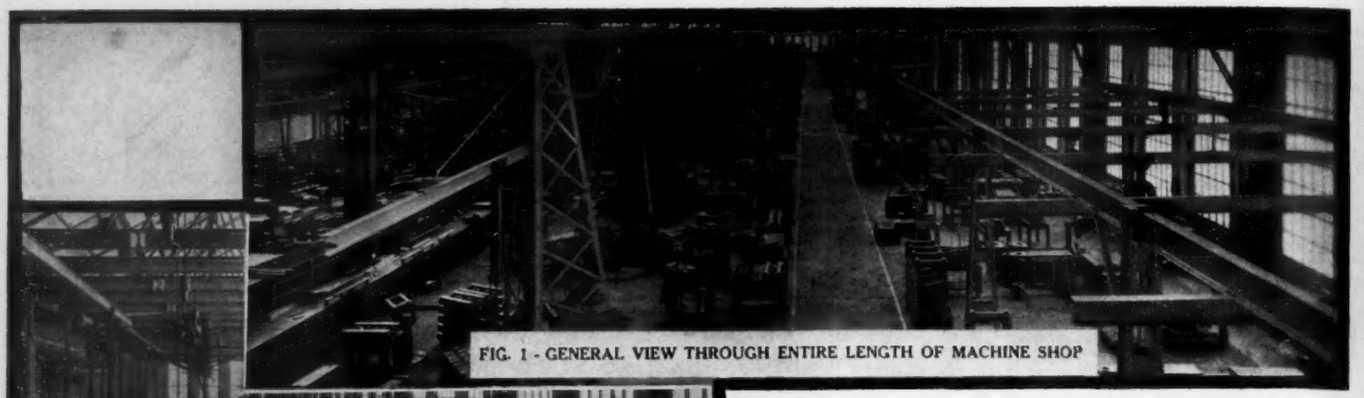


FIG. 1 - GENERAL VIEW THROUGH ENTIRE LENGTH OF MACHINE SHOP

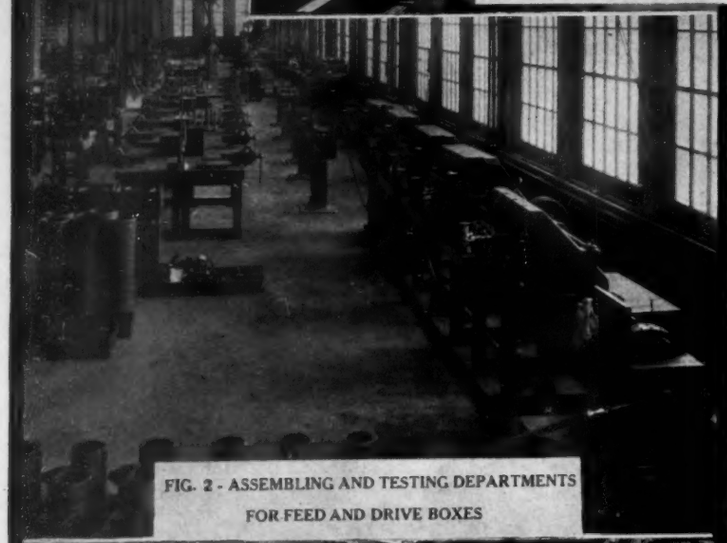


FIG. 2 - ASSEMBLING AND TESTING DEPARTMENTS FOR FEED AND DRIVE BOXES

The Cincinnati Mill Machine

SEVERAL years ago, while seeking a location for a new plant, Fred A. Geier, president of the Cincinnati Milling Machine Co., conceived the idea of a factory colony grouped around a central power plant. A tract of land comprising 100 acres was secured at Oakley, a suburb of Cincinnati. The site is ideal as to topography, railroad and street car facilities and labor supply. Three other companies, in need of larger and better manufacturing facilities, joined in the original project and a real estate development company was formed which assumed the work of laying out factory sites, streets, railroad connections, etc. A central power plant was built which is operated by a separate company, but is owned by the seven plants to which it furnishes power, light, heat, compressed air, water, sprinkler service, etc.

A tract of 17 acres was retained by the Cincinnati Milling Machine Co., upon which it was decided to erect a complete machine tool manufacturing plant consisting of a foundry and machine shop. The casting department, operated by the Modern Foundry Co., but owned by the stockholders of the Cincinnati Milling Machine Co., was built in 1907. It has a daily melting capacity of 30 tons, the entire melt being used exclusively for the production of machine tool

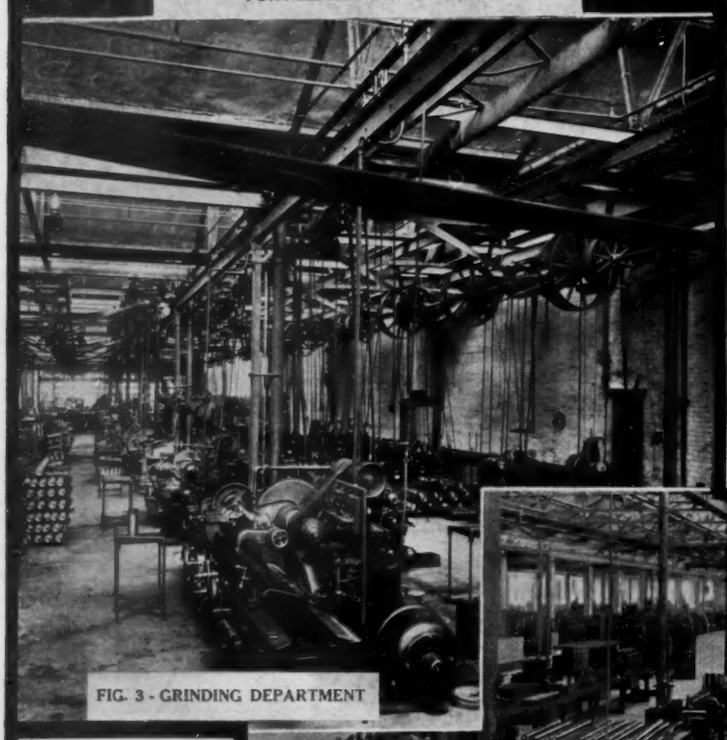


FIG. 3 - GRINDING DEPARTMENT

FIG. 4 - ASSEMBLING, TESTING AND PACKING DEPARTMENTS

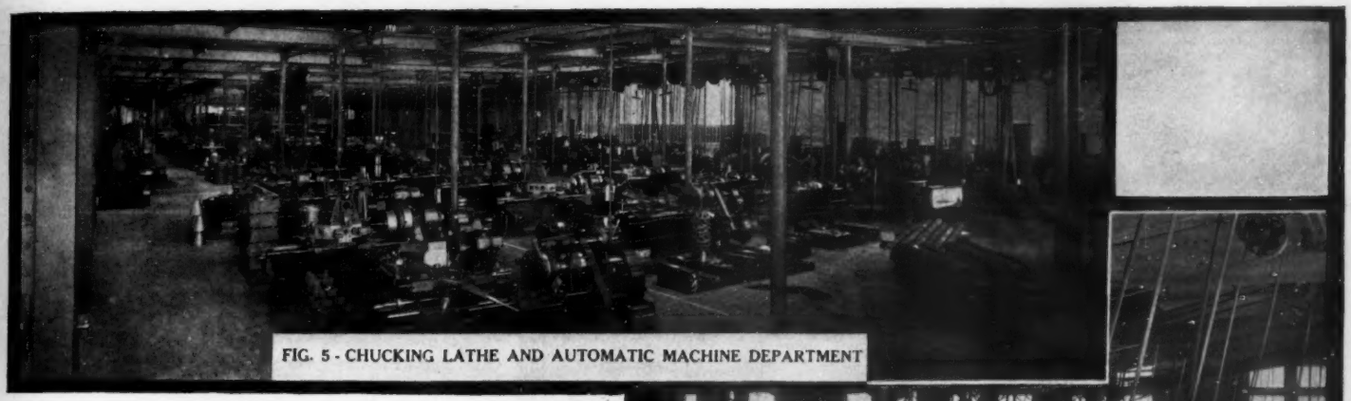


FIG. 5 - CHUCKING LATHE AND AUTOMATIC MACHINE DEPARTMENT

ing Machine Co.'s Tool Plant

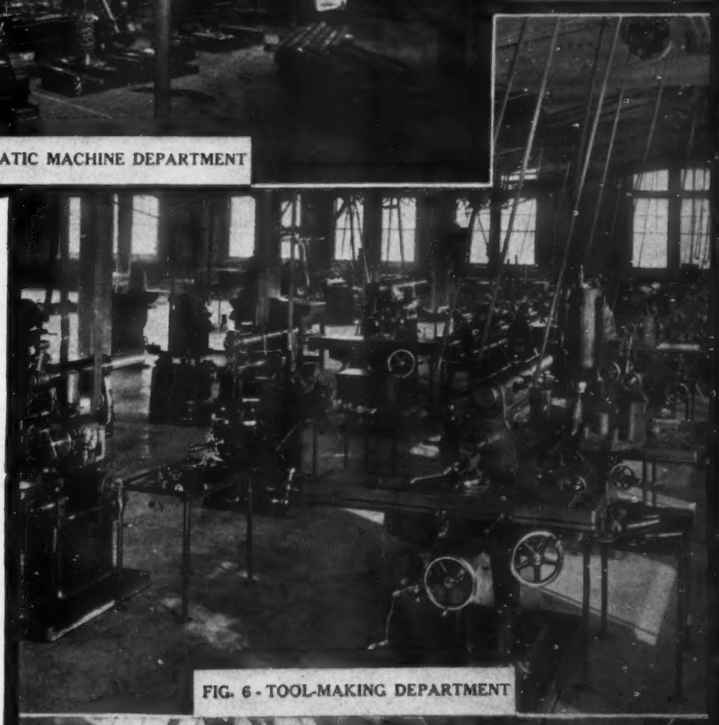


FIG. 6 - TOOL-MAKING DEPARTMENT

FIG. 7 - DETAILED PAINTING DEPARTMENT

castings. The foundry is unique in its widespread employment of labor-saving devices, and practically all castings, including the largest milling machine columns, are machine-molded.

The first section of the machine shop was erected in 1909 and 1910, and was operated in connection with the old plant until the final three-story section was ready for occupancy in the fall of 1911. The plant is L-shaped, 585 feet long and 380 feet wide. The general arrangement of the shop is clearly shown in Fig. 1, which is a view looking north through the length of the building. A view across the width of the shop is shown in Fig. 4, and Fig. 27 is a plan of the buildings which shows also the sequence of operations on castings received from the foundry and the various successive operations in machine tool manufacture, in logical order, from the raw material to the finished product. The machine shop proper is a one-story brick and steel building, 16 feet high under the trusses and 26 feet under the peak. A 60-foot section along the eastern length of the building, 21 feet high under the trusses, is traversed by five-ton traveling cranes. The roof is concrete and steel, covered by composition roofing. It is supported by hollow cast iron columns of such small diameter that there is an absence of that sense

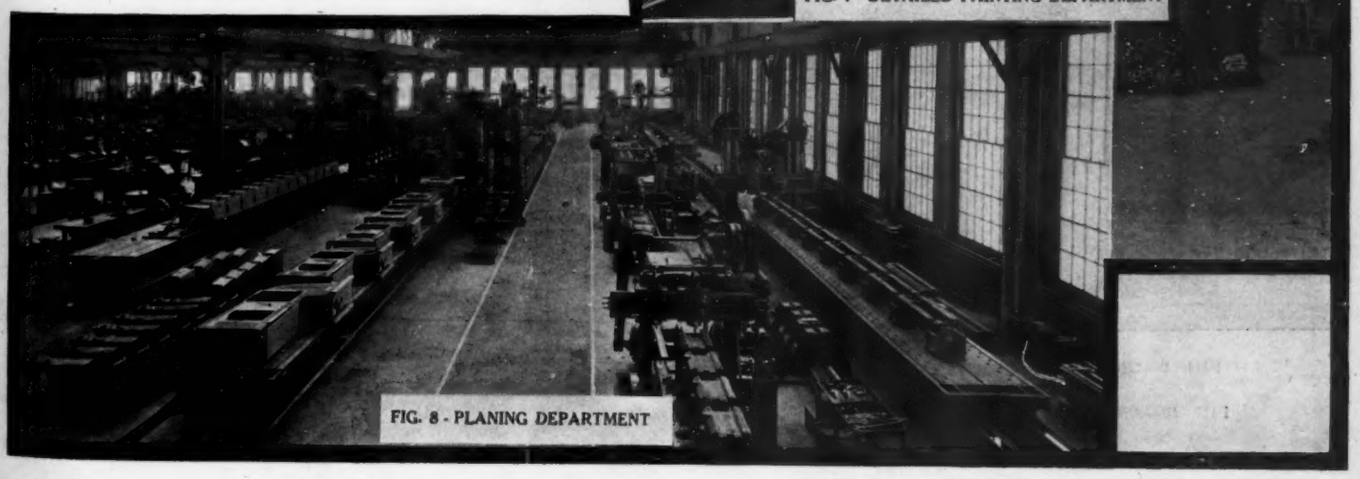


FIG. 8 - PLANING DEPARTMENT

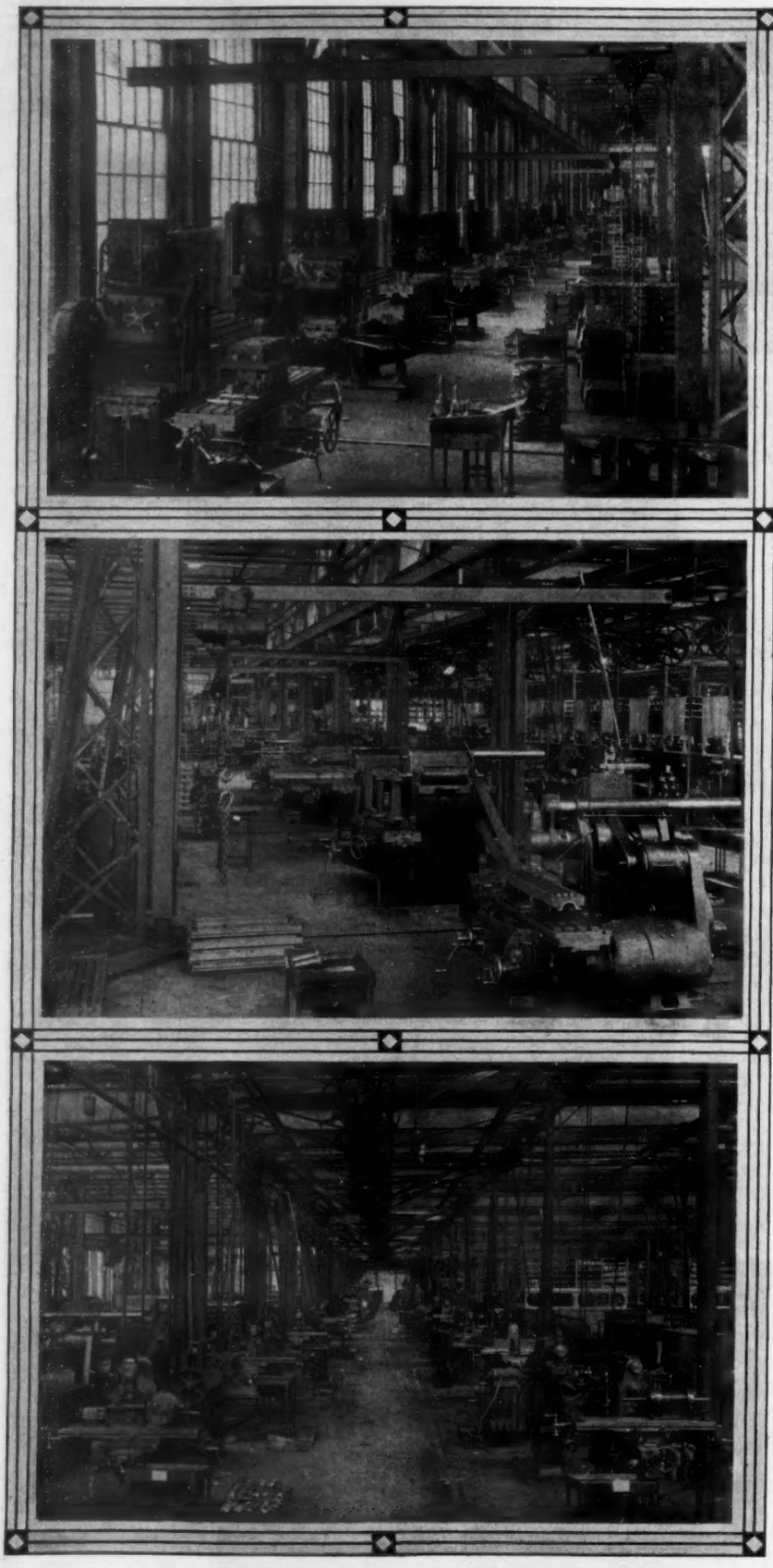


FIG. 9—ONE SECTION OF THE MILLING DEPARTMENT

FIG. 10—ANOTHER VIEW OF THE MILLING DEPARTMENT

FIG. 11—SMALL MILLERS IN THE MILLING DEPARTMENT

of obstruction which is sometimes present in shops using built-up steel columns. These columns are hollow, and also serve as downspouts. The roof trusses are provided with gusset plates to facilitate placing countershafts and craneways in either direction. Fig. 5 shows these plates used for carrying the beams from which motors are suspended.

The floor is reinforced concrete, 8 inches thick, making unnecessary individual foundations for machines, except for the largest planers. It also provides that stability for the testing and assembling departments, which is so essential for satisfactorily doing this work. That part of the shop which is occupied by the planers, has a floor 12 inches thick, to carry the weight of the smaller planers and the masses of heavy material in process of manufacture grouped around them.

In preparing the ground before laying the concrete floors, the sod was removed and the surface was rolled with a 10-ton roller, after which it was leveled and rolled again. A covering of tar felt was placed over the entire surface to hold out the moisture and the concrete was placed directly on this covering. The reinforcing consists of ¼-inch twisted bars laid at right angles and placed 12 inches apart, being wired together at all intersections. This makes the entire floor a monolith. This style of floor proved so satisfactory during more than a year's experience in the first part of the building, that it was unhesitatingly adopted for the final addition recently completed.

The south front of the building is three stories high and is of reinforced concrete, monolithic construction, faced with brick. The upper floors are 60 feet deep and 380 feet wide. The first floor is a continuation of the one-story shop, forming an unbroken L-shaped room, 380 x 585 feet. The purpose of adding two upper stories over this part of the building was to provide suitable quarters for the various offices, and space for those departments which earlier experience proved should preferably be separated from the main machine shop.

On the third floor are located the offices, the engineering and the clerical departments. The floors of all the offices, as well as the floor of the main entrance to the building, are laid with ceramic tiling and there is a 6-inch sanitary base of green tile, the whole producing not only a durable and sanitary effect, but also very pleasing, ornamental appearance. The western end of this floor contains an auditorium having seating capacity for

600 people, and provision has been made also for a kitchen and dining room.

Adjoining the engineering department on the east is the tool-making department, which location brings it in close touch with the tool-designing department. The accompanying illustrations show the extent to which this principle of placing all related departments adjacent, is adhered to, and this is carried out in the offices to the same extent as in the manufacturing departments.

Cutter Grinder Assembling

The second floor is devoted to stock rooms for finished details, and also for assembling cutter grinders, dividing heads and other attachments. This is the only manufacturing done outside of the main machine shop floor. This portion of the second floor was set aside for this purpose solely to provide a place where the dividing heads could be assembled as a specialty, this being precision work, and experience has shown that it can be accomplished more satisfactorily in an isolated department.

The employes' entrance is on the Columbia road side of the plant and leads directly into the service room. Ventilated, individual steel lockers are provided for all the men. The wash basins are of the individual type and a sufficient number has been installed to provide one basin for every three men. Hot water for this room, the shower baths, and all the lavatories in the offices, is obtained by instantaneous heaters.

The service room also contains a large toilet room similar to the ones distributed at intervals throughout the plant. The toilet rooms are marble-lined, have marble stalls, and all the metal work is nickel-plated. These materials were selected because of the ease with which they can be kept clean, and the entire room kept in a sanitary condition. The side walls have a space of clear glass above a line 4 feet from the floor. Adequate ventilation is obtained through a 4-inch opening all around the bottom between the side walls and the floor, and a suction ventilating fan at the top. The shower baths for the use of the employes are built of marble, and each space is divided into two sections, the bath being in the rear end and the dressing room in front.

All the manufacturing departments are lighted by an ample installation of Cooper-Hewitt mercury vapor lamps, which furnish sufficient illumination for all purposes without the

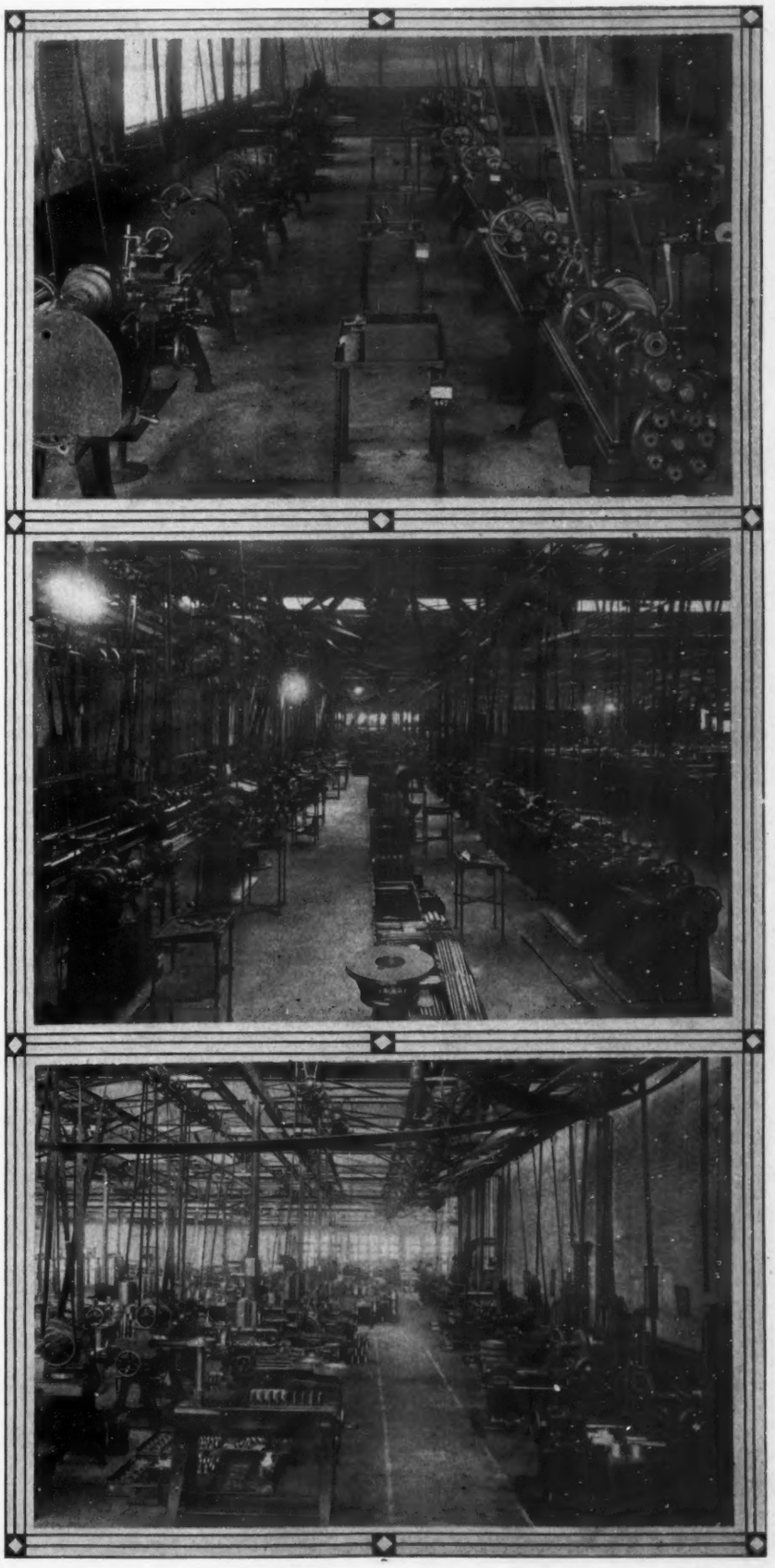


FIG. 12—ANOTHER VIEW OF THE TOOL-MAKING DEPARTMENT

FIG. 13—THE SCREW MILLING DEPARTMENT

FIG. 14—GEAR CUTTING DEPARTMENT

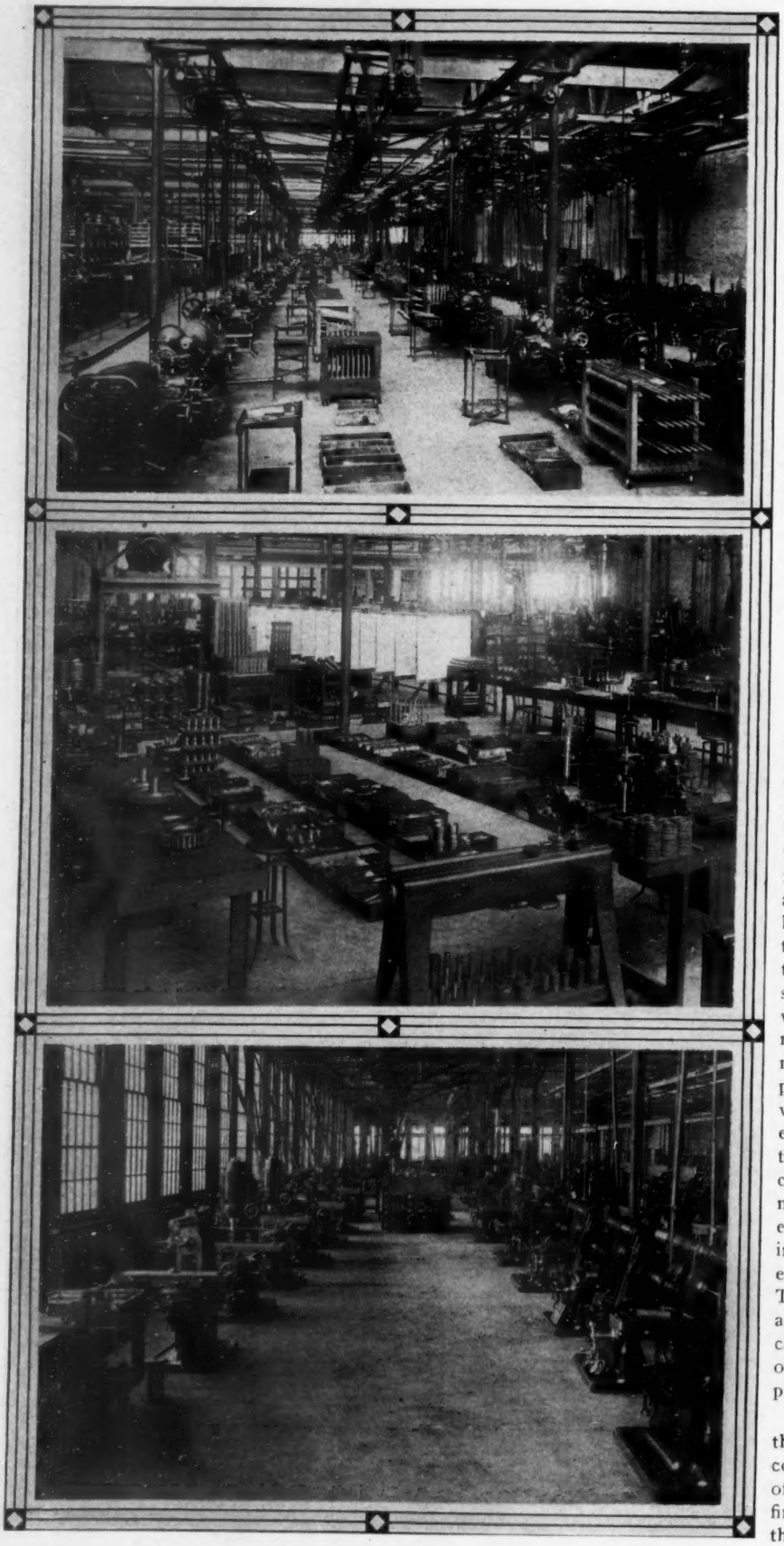


FIG. 15—ENGINE LATHE DEPARTMENT

FIG. 16—INSPECTION AND TRACING DEPARTMENTS AND CLEARING HOUSE

FIG. 17—FINISHED MACHINE TESTING DEPARTMENT

use of incandescent lights except in a few very special cases.

The offices and engineering departments are lighted by the indirect system using Tungsten lamps in clusters. This soft, diffused and evenly-distributed light, with its entire absence of glare, is proving as satisfactory as good daylight conditions.

The buildings are heated by a forced circulation hot water system. In the saw-tooth, single-story part of the building, the circulation pipes are placed on the lower chords of the trusses immediately below the window space. This arrangement warms the cold air descending from the roof windows and prevents all discomfort from drafts caused by descending currents of cold air from these windows. The distribution and amount of radiation has proven sufficient for even the extreme weather of the present winter, as shown by the recording thermometers placed at different points in the building.

Ventilation

The provisions for ventilating have also had a sufficient test during the extremely hot weather of the past summer, during which they proved entirely adequate, the shop having been held at a comfortable temperature and with an ample amount of fresh air at all times. Good ventilation is insured, first, because of the height of the building under the trusses and the height of the trusses themselves, which provide ample space between the hot roof and the workmen, and second, by an arrangement of the roof windows, permitting the opening of the entire upper one-third of the sash. This provides 60 square feet of opening for each 500 square feet of floor space, the liberality of which is evident when compared with the usual arrangement of one 48-inch ventilator for each 100 feet length of roof, providing 12 square feet of opening for each 2,500 square feet of floor space. The sash opening devices are operated from the floor, and in some cases as much as 100-foot lengths of sash are controlled from a single point.

The design and construction of these buildings throughout is in accordance with the rigid specifications of the parent New England mutual fire insurance companies, as well as the engineering departments of the stock companies, in consequence of which this building is insured under the lowest rate granted any manufacturing plant.

The relation of the various manu-

facturing departments to each other, and the course of the work in process of manufacture through the various departments, to the assembling department, and thence to the shipping platform, are indicated in Fig. 27.

The foundry is located north of the machine shop, with which it is connected by means of an industrial track. A depressed railway siding connects with this industrial track, over which all the raw materials enter the north end of the building.

Sequence of Operations

The various departments are located in relation to each other, in accordance with the sequence of operations, the first operation machines being at the north end of the building where the material enters. On one side are racks, upon which is stored all the bar steel, adjacent to the automatic screw machine shown at the extreme right of Fig. 5, which also shows the turret lathes for first operations on the small castings, drop forgings, etc. The machine equipment, in general, is highly specialized, and many machines are specially fitted up for certain work, which is never done on any machine except the one so equipped. There are also many special machines which have been designed and installed mainly to improve the quality of the work. Some extremely large bar work is done on automatics, the largest machines of this type taking bars 6¼ inches in diameter.

Motor Drives

Individual motor drives are largely used, and wherever possible, the motors are mounted directly on the machines. In some cases, however, this has not been found desirable, and the motors are mounted on the ceiling directly over the machines. At the extreme right of Fig. 5 are shown the vertical boring mills and the engine lathes are illustrated in Fig. 15. The engine lathes are arranged in four rows, the two center rows being placed close together, back to back, with an ample aisle space between each of these and the outer row. The individual iron work trays for each of the workmen, clearly shown in this view, have been adopted as the standard tool trays for machine operators. The controlling factor here again is cleanliness and neatness, combined with durability and efficiency.

Adjoining the lathe department is the grinding department shown in Fig. 3, and next to this are the thread-milling and screw-chasing machines, Fig. 13. In this shop all

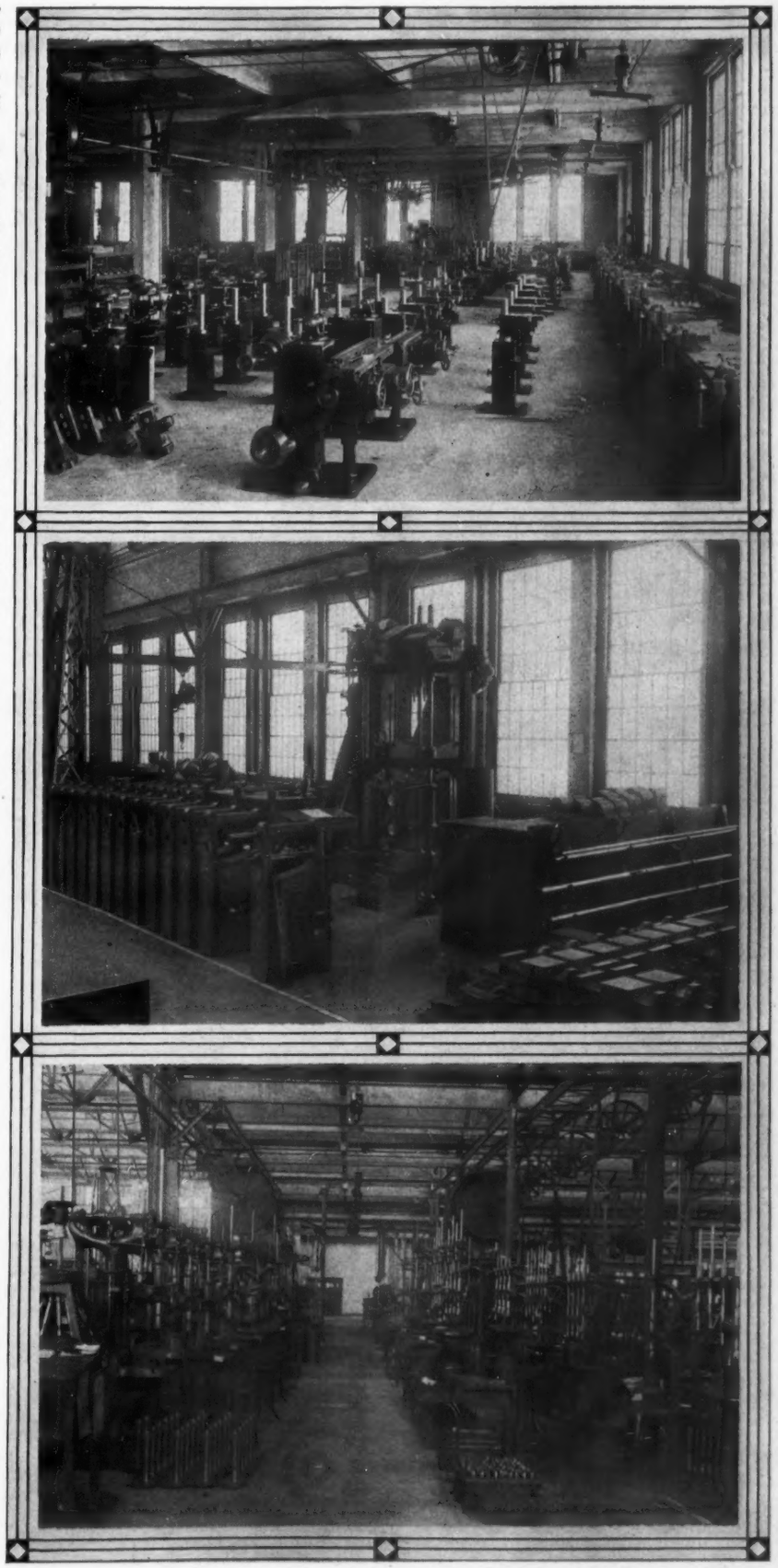
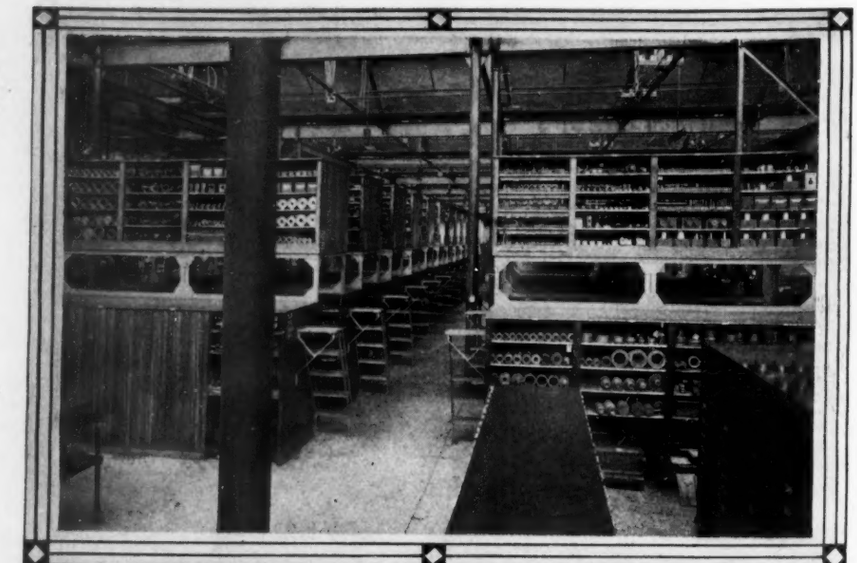
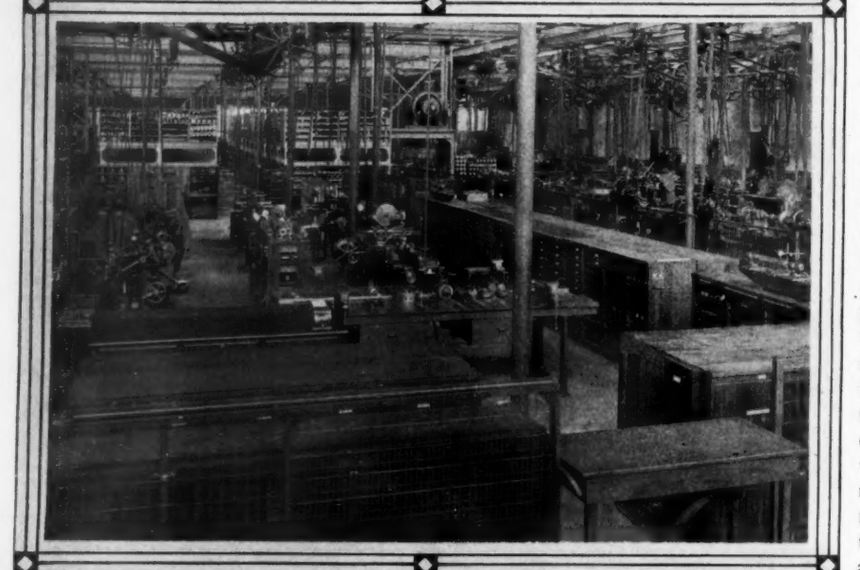


FIG. 18—CUTTER GRINDER AND MILLING MACHINE ATTACHMENT ASSEMBLING DEPARTMENT

FIG. 19—THE COLUMN BORING DEPARTMENT

FIG. 20—DRILL PRESS DEPARTMENT





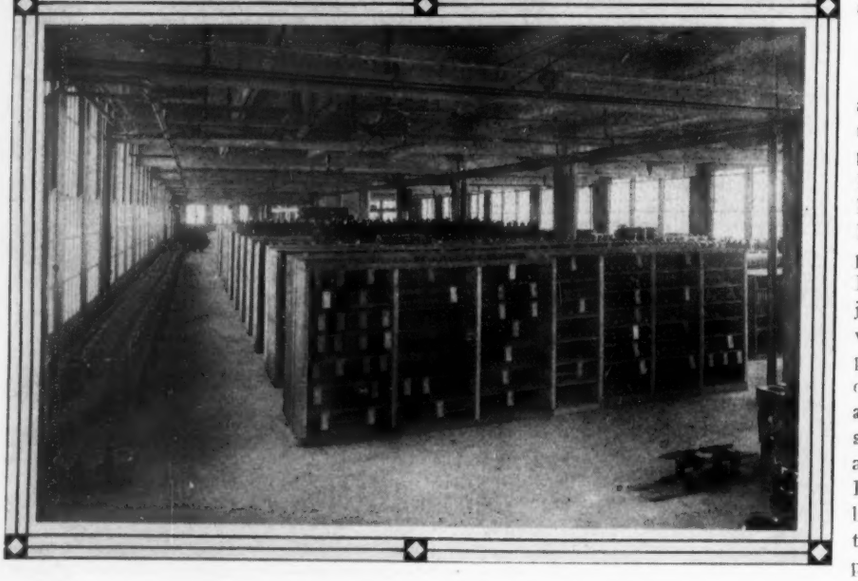


FIG. 21—TOOL STORAGE CASES IN TOOL ROOM

FIG. 22—GENERAL VIEW OF TOOL ROOM

FIG. 23—STOCK ROOM FOR FINISHED DETAILS

short screw threads are milled, while the long lead screws are threaded entirely on automatic thread-chasing machines. Each lead screw is carefully tested for accuracy for every 6 inches of its length.

Gear Cutting Department

Adjacent to the thread millers are the gear cutters, Fig. 14. This equipment includes a Gleason bevel gear generator, and two special tooth-rounding machines shown in the foreground at the right. These have been designed and built in this shop to meet the company's special requirements. They have a capacity for rounding the teeth on 16 inches diameter, 2½-inch pitch, drop forged steel gears. All gears are tested on fixed centers the theoretical distance apart, and the gears are cut as closely as possible to the theoretically correct dimensions. Inspection requirements for all gears are that they must show a proper bearing and must revolve freely with pinching and without backlash, when tested on these jigs, one of which is provided for every size gear. A 20-degree pressure angle form of tooth has been adopted because of its greater strength, and the cutter for each gear is specially developed for the number of teeth for that gear. These cutters are made in pairs to conform to the number of teeth in the gears that work together. Proper running clearances between the gears are provided in the finished machine by arranging their final center distances a few thousandths of an inch farther than the correct figured distance apart.

The Tool Room

The tool room is located, as nearly as possible, centrally in the main manufacturing department and comprises a floor space of 28 x 200 feet. It is shown on the extreme left of Fig. 15 and on the extreme right of Fig. 14. A general view of the department is shown in Fig. 22, while Fig. 21 is a view of the shelves. All jigs, tools, and fixtures, except some very large ones, are kept in this department and may be withdrawn only on workmen's checks and on presentation of a shop order, which will show the part number and the operation for which the jig is required. Every part entering into a machine bears the number of its drawing, and this same number will apply to the pattern jig drawing, jig, tools, instruction sheet, and in fact, every tool of any kind that is used in its manufacture.

The tools and jigs are listed on a card index, and each card lists all of

the tools of every kind that are used for that operation, and also gives their definite location on the shelves. These cards bear the part number of the piece, and are arranged numerically by these numbers, thus forming a direct and quick location system. To facilitate the immediate location of the jig itself, the case numbers extend into the aisle. All odd numbers are on one side of the aisle, and all even numbers on the opposite side. The upper tier of cases is placed over the spaces between the lower ones, the tops of which serve as platforms accessible by the steel ladders shown in Fig. 21. This arrangement economizes space and gives easy access to all the shelves.

Care of Cutting Tools

This is distinctly a storage and distributing room, no tool-making nor repairing being done, but all cutting tools are sharpened here immediately upon their return from the manufacturing departments and before being placed on the shelves again. A receiving rack for used tools is also provided. All tools, jigs and fixtures are inspected after having been used, and if in need of repairs, are sent to the tool-making department. All standard small tools, such as drills, reamers, gages, etc., are kept in cases. Because of the large size of this tool room, there are three tool windows, one of which serves the drilling, fitting and gear-cutting departments, another the screw-cutting, grinding and engine lathes, and the third, the turret lathes, millers and planers.

Immediately adjacent to the tool room is the inspection department, Fig. 16. Here all details are inspected after each machining operation. The inspection is by micrometers, clock indicators, running centers and fixed gages. All hardened gears and clutches and similar parts are tested under the scleroscope, definite standards of hardness having been determined upon for each part. The routing department is also located here. The large charts shown in the center of Fig. 16, contain a record of every piece passing through the shop, indicating which department it is in, and, therefore, which operation is being performed on it, and also the date when each successive operation must be finished. In this way absolute control is kept over the movements of every individual piece and operation. If, for any reason, some operation should be allowed on certain parts in advance of the scheduled time, these are held in the clearing house of the routing department, and

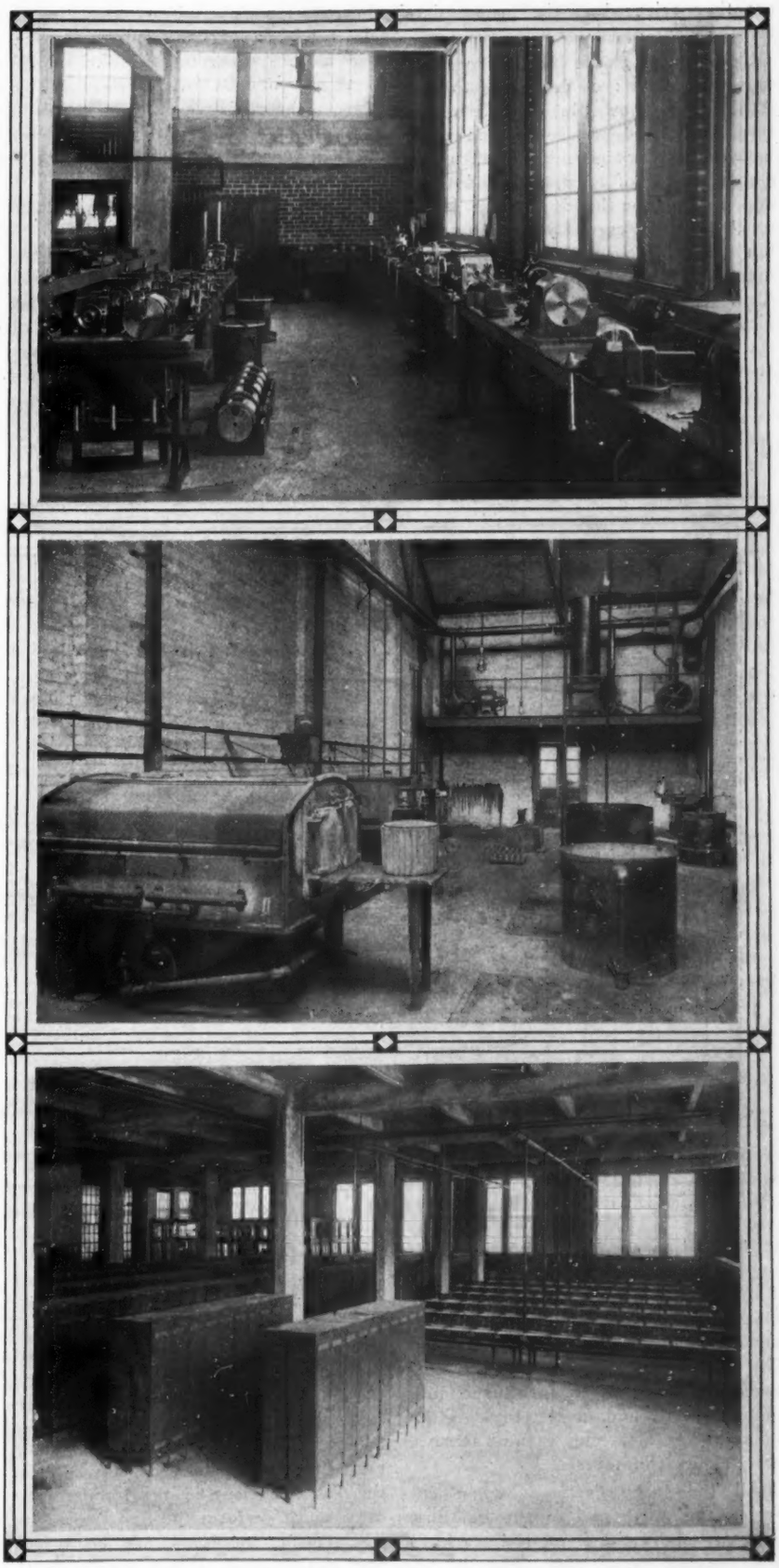


FIG. 24—A CORNER OF THE DRIVING HEAD ASSEMBLING DEPARTMENT

FIG. 25—HARDENING AND CARBONIZING DEPARTMENT

FIG. 26—SERVICE ROOM, SHOWING LOCKERS AND WASH BOWLS

are then released at the proper date for the next operation.

Upon passing the final inspection, finished parts are delivered to the stock room shown in Fig. 23, where they are placed on shelves and await withdrawal for assembling. An accurate record of receipts, withdrawals and balance on hand of each individual part, is carefully kept on the bin slips attached to each shelf, a number of which are shown in the illustration. This stock room occupies a part of the second floor of the three-story part of the building. It is located close to the elevator, which is immediately adjacent to the assembling department on the machine shop floor.

The remainder of the second floor is devoted to cutter grinder and milling machine attachment assembling, Fig. 18. This also illustrates very clearly some of the details of construction of this concrete building. The cast iron bolt slots in the bottoms of the girders for suspending countershafts, and at the tops of the columns for attaching crane runways, are of special interest.

All the large castings, when entering the north end of the building, are carried by the industrial track to the planing department, Fig. 8. It will be noted that the planers are all driven by individual motors. A number of them have 40-foot beds, the largest of which, 72 inches x 72 inches x 40 feet, is in the background on the extreme right. They are all provided with a variable cutting stroke, and a constant return stroke of 100 feet per minute. After leaving the planers, the castings pass on to the drilling, milling, or boring departments for the next operations.

Milling Department

Several views of the milling department are shown in Figs. 9, 10 and 11. The machines are grouped according to size and in regard to the nature of the work done on them. All the larger machines are provided with individual motor drives and are located under the traveling cranes. There is a row of verticals along the wall, and these are served by jib cranes as shown, and similarly a row of large horizontal machines, is placed on the other side of the main aisle, also served by jib cranes. The space between these machines is entirely clear and all of it is available for handling work. The machines face the jib cranes to facilitate swinging the large castings onto and off the machines. The work enters this department from the planing department, and the first machines in the line are the ones which perform the first operations. The smaller machines are belt-driven and are arranged in two parallel rows, but in this case they are placed back to back instead of facing each other.

The radial drills, which are chiefly employed on the large castings which are handled by jib cranes, are shown in the center of Fig. 1, under the traveling cranes, while the uprights are shown in Fig. 20.

The column-boring department is shown in Fig. 19. The faces of the columns are first rough-scraped, and then they are placed in a specially-designed machine which bores the spindle hole and the over-arm hole at one time. This machine is shown in the center of this illustration. The boring bars are in a vertical position; they may be operated simultaneously or independently, either for boring or facing. The correct distance between the holes and their parallelism is taken care of entirely by the guides for the boring bars. The guides for the outer bar are removable and are provided in the proper sizes for each size of column. A number of these are shown on the top of the case at the right of the illustration. The holding device on the bed of the machine locates the column central with the boring bars, which are driven by a motor (not shown) and are connected with the driving spindles by a bayonet lock, facilitating quick attaching and release, and providing sufficient play to allow the bars to revolve freely regardless of lack of nicety of alignment with the driving spindles.

An entire lot of columns of a size is bored without taking the bars out of the machine. When one column is finished the bars are lowered out of the way, and raised again by compressed air when the next column is in place. The bed of the machine is also

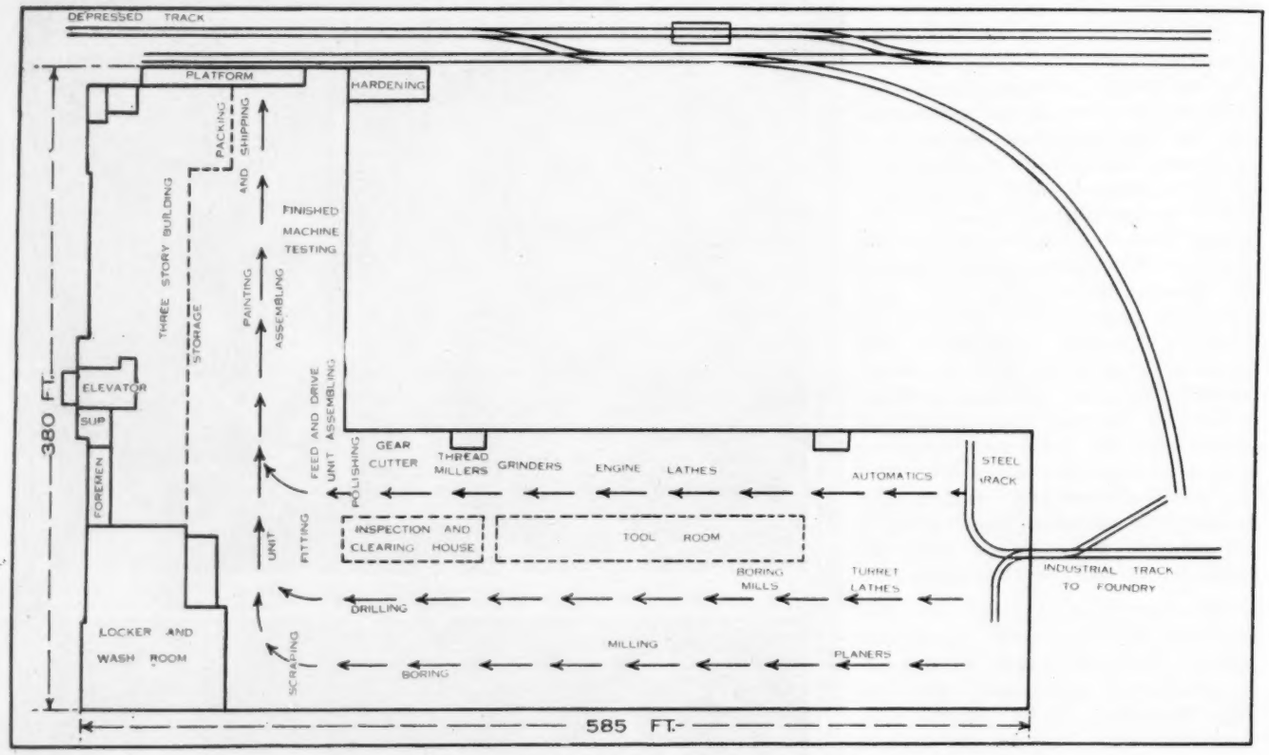


FIG. 27—PLAN OF THE CINCINNATI MILLING MACHINE CO.'S MACHINE SHOP

moved by compressed air, clear of the housing for chucking the work. There are two sets of operating levers, and the operator is provided with an elevator, the frame work of which is shown in front of the machine. This enables the operator to change his position to suit his convenience. The machine was designed and built especially for this one operation. It might be noted also, that the chief consideration which led to the building of this machine, was to obtain the highest possible accuracy, rather than a reduction of time required for this operation.

After the columns have been bored, they are tested for accuracy by an inspector located in this department. The column in the foreground shows one form of testing instrument in place for examining the accuracy of the spindle holes relative to their being at right angles with the column face in both a vertical and horizontal direction. Further tests are made for parallelism, diameter and distance of overarm and spindle holes, their central location in relation to the column face, width of column, etc. A record of these tests accompanies each column to the fitting department. This is merely an *in process* inspection, and does not in any way take the place of the final accuracy test to which the finished machine is subjected.

Scraping Department

All the large parts of the machines, such as columns, knees, saddles, tables, etc., finally arrive in the scraping department shown in the foreground of Fig. 1. The scraping is all done to surface plates and master gages. In this department there are a number of interesting special devices, as, for example, the swiveling arrangement for holding the tables for the scraping operation, which enables the workman to always bring the surface being worked upon in a horizontal position. The so-called scraping machine, at the left of Fig. 1, between the first two jib cranes, is especially interesting. It consists of a hydraulic cylinder fitted with reversing valves, which imparts to the piston a continuous reciprocating movement, and is used for sliding the large parts together to determine the accuracy of their bearings. It is shown in this position in the illustration. The table of a milling machine is held in an inverted position on the scraping fixture, and the saddle is mounted in its correct relation with the table. The piston of the scraping machine is connected with the saddle, and slides the latter part back and forth on the table for the purpose mentioned. This relieves the workman of the labor of sliding these heavy parts together, an operation which requires the expenditure of a sufficient amount of strength to unfit him afterwards for the delicate operation of making a good job of scraping these parts to a final correct bearing. It is arranged to swivel, thus serving a number of scraping stands, and it may be hydraulically elevated to suit the height of the different sizes of parts.

Column Scraping

The column scraping is done under the framework at the right of Fig. 1, which consists of a number of parallel runways for hoists, all of them extending out into the main aisle over the castings as placed by the traveling cranes. This view illustrates the extent to which crane service and hoists are provided. All the machine work and fitting on the large castings are accomplished in this section of the shop which is traversed by 5-ton cranes with 60-foot span. The cranes serve all of the planers at the opposite end of the building and transport material from one department to another. The individual machines, other than the planers, are served by the specially-designed jib cranes shown, as is also the scraping department at the left of Fig. 1.

These jib cranes are self-contained. The steelwork is fastened to, and supported by a large cast iron base. The mast rests on a ball-thrust bearing, consisting of a single ball of large diameter. Its movement is surprisingly easy, requiring only a few pounds pressure to swing it, even when applied within a foot of the inner end of the boom. These cranes are not a permanent part of the building, but are bolted to the floor and can be placed in some other part of the shop at any time that it may be desirable to do so.

Feed and Drive Box Assembling

The assembling of feed and drive boxes is shown in Fig. 2. In the foreground are shown the testing stands, on which each feed box and each drive box is given a running and endurance test under conditions which duplicate those under which it will operate when it is placed on the machine. In the immediate foreground is shown the driving clutch pulley testing stand on which every one of these units entering into the single pulley high power machines, is given a running and a load test. The stand is provided with a pony brake and an ammeter, which indicates the load applied under each test.

All those castings which have only part of their surfaces machined, are given a coat of paint before the first machining operation. They are again returned to the detail painting department, shown in Fig. 7, for a final coat after the last machining operation, and before they pass into stock.

Fig. 24 shows a corner of the dividing head department. This is precision work, and for that reason this department has been isolated. On completion, each dividing head is subjected to the most rigid micrometric and microscopic accuracy tests. For years it has been the practice of the Cincinnati Milling Machine Co. to file a copy of every test. To learn the degree of accuracy to which any dividing head was originally made, it is only necessary to refer to this file. All the dividing worm wheels are hobbed on a machine desiged especially for this one operation. It is shown in the background at the right of Fig. 16. It hobs worm wheels, which, under the final accuracy test to which the finished dividing heads are subjected, will index work 8 inches in diameter with an average accuracy of 0.00025 inch accumulative error, in any one quarter of the circumference. In addition to the clutches and other small parts, a large number of the gears entering into these machines are also hardened.

Carbonizing and Hardening

The carbonizing and hardening department is shown in Fig. 25. It is equipped with gas furnaces and lead baths. Temperatures are determined by a pyrometer mounted on a track over the furnaces. The pressure blower is motor-driven, and a gas engine is also installed for emergency service, providing the certainty necessary for continuous carbonizing. Two oil tanks, immersed in running water, are sunk into the floor. They are provided with steel covers for closing them when not in use. The circular tank is a combination water and oil arrangement. The oil chamber is a narrow annular space with water on both side and bottom. Cold water enters at the top of the central water space, flows under the annular oil chamber and overflows at the top of the outer water chamber.

All the more important gears are stamped with the name of the steel from which they are made, before they are delivered to the hardening room. This is done for the guidance of the men in this department in giving each brand of steel the proper treatment. The main driving gears of the high power single pulley machines have only their rims and teeth hardened, thus avoiding distortion.

Since the tool-making department does not make any part of the product

of the shops, there would be no advantage in having it located with the manufacturing departments. On the other hand, there is an advantage in having it located by itself, and it has been placed on the third floor in order that it might be close to the tool-designing and engineering departments. It might be noted that this department is equipped complete with all the machine tools necessary for tool-making, including cylindrical, internal and surface grinders, so that it need not call on any of the manufacturing departments for assistance on any work except an occasional planing job on unusually large parts belonging to some of the larger fixtures. It will also be noted that there are no shapers, all of such work being done on milling machines. This department has its own separate tool room, making it independent in this regard, of the main tool room.

Among the special equipment of measuring appliances might be mentioned a Pratt & Whitney measuring machine and a set of Johansen gages.

The construction of the new model milling machines is entirely on the unit system, each group of mechanism, such as feed boxes, drive boxes, driving clutch pulleys, reverse boxes, etc., being a complete unit in itself. The final assembling, therefore, is merely the assembling of these units into a complete machine.

The Assembling Floors

A general view of the assembling floor is shown in Fig. 4. The main frame units are shown in the foreground, and as they progress through the department, the various units are attached by successive groups of men until the machine finally arrives in the finished testing department, Fig. 17. Here every machine is given a thorough test for accuracy of alignment and proper operation of all details. Each machine is given a running test, under belt, a specified length of time, and every machine must do a specified amount of milling successfully before it passes inspection. A permanent record is kept of all the tests on each machine.

Adjacent to the testing floor, is the final painting and packing department. Two shipping doors lead to the shipping platform. These doors are closed by steel, drop curtain, fire doors, and are entirely surrounded by the circulation pipes of the hot water heating system.

The shipping platform, the outside of the building, parallels a depressed track, which brings the floors of the cars on a level with the platform. Three cars may be loaded at one time. No crane service is provided as all shipments are made in box cars.

Meeting of Boiler Makers at New Orleans

Methods of securing uniform legislation throughout the states governing the construction and inspection of steam boilers will be discussed at the convention of the American Boiler Manufacturers' Association, to be held in New Orleans, March 12 to 15, inclusive. The association has been fighting for the adoption of uniform boiler specifications for many years.

Its first action was in 1889, when it established standard specifications for boiler steel and construction that have become the standards which manufacturers and engineers have generally adopted. In 1907, Massachusetts adopted a code of boiler rules in general conformity with these standards, but at the March convention an effort will be made to secure concerted action in obtaining better and more uniform legislation.

A number of interesting papers will be read at the convention, among them being one on "Rivets", by D. J. Champion, vice president and general manager of the Champion Rivet Co., of Cleveland; "The Manufacture of Charcoal Iron Boiler Tubes," by H. A. Beale Jr., president of the Parkesburg Iron Co., Parkesburgh, Pa.; "Segregation of Steel," by Charles L. Huston, vice president of the Lukens Iron & Steel Co., Coatesville, Pa.; and "Modern Boiler Shops and How They Should be Equipped," by H. C. Meinholtz, superintendent of the Heine Safety Boiler Co., St. Louis.

Plan Liability Measure

A committee has been named to draft an employers' liability and workmen's compensation bill which is to be presented at the next meeting of the Pennsylvania legislature. Gov. John K. Tener has appointed these members of the commission: David R. Reed, of Pittsburgh, lawyer, chairman; J. Barry Colahan, of Philadelphia, lawyer; Morris Williams, of Philadelphia, and George C. Hazel, of Chester, representing employers; Francis Feehan, of Pittsburgh, district leader of the miners' union, and John J. Cushing, of Monessen, rod mill roller, representing employes; Prof. Francis H. Bohlen, law department of the University of Pennsylvania, expert and secretary of the commission.

DON'T! DON'T! DON'T!

Helpful Suggestions and Instructions to Workingmen.

The McClintic-Marshall Construction Co., Pittsburgh, has issued a "warning to workingmen" which is apparently the result of long experience. The full text follows:

Warning to Workingmen.

YOUR FAILURE TO OBSERVE THE FOLLOWING INSTRUCTIONS MAY RESULT IN INJURY OR DEATH TO YOU OR YOUR FELLOW WORKMEN.

Improper Piling of Material

Improper piling of material is the cause of most accidents. Pile materials in an orderly, careful manner, so that it cannot roll, fall or tumble over. Make piles level, plumb and as low and stable as practicable.

Cranes and Hoists

Don't use a hoist unless you know how. In making hitches, see that the load is balanced and cannot slip. Test the hitch by hoisting slowly. If it is secure, hoist load plenty high to clear men and material over which it is to pass. Do not overload hoists. Don't pass under a load when it is hanging on the hoist. Don't place blocking while load is over you. Arrange landing place and blocking before load is moved from one place to another. In handling heavy pieces with assembling hoists, see that the center of the load is under the center of hoisting beam. In traveling with assembling hoists, never hand on the operating ropes. When hoists are traversing shop without load, chain and hooks should be run up high to clear men, tools and materials. Don't pull a load towards you, push it from you.

Trucking

Load material on trucks securely, so that it cannot roll or fall. Center the load carefully, both lengthwise and crosswise of truck. In the case of girders or high pieces, securely fasten the load to the standard on truck. Don't push on the truck, but push on end of load; don't pull. If necessary to pull, use a rope fastened to truck.

Be Careful and Vigilant

Be careful and vigilant with a view of preventing accident to yourself and fellow workmen. Don't ride a load or a locomotive or other crane. Don't work on or about a crane runway when the crane is in use, unless there is a stop between you and the crane. Don't stand or work under a load. Rivet helpers should keep feet and legs from under the piece being riveted. Don't grasp a reaming tool to enter the hole, whether running or not. Use the handles. Don't roll a piece over until you look to see that everyone is out of the way. Don't let material, equipment or tools lie around.

Don't Use Unfit Tools

Be sure tools and equipment you use are in good working order. If they are not don't use them.

Unfit Condition

Don't go to work if you do not feel well. If you are lame or have any defect in hearing or eyesight, you should not work in a bridge shop, as by doing so, you endanger the lives of yourself and others. If you are inexperienced in, or unsuited to the work to be done, don't undertake it.

Don't work with men who don't observe the above rules.

RAIL DUTY SUSPENSION

Recommended Until Canadian Mills Can Meet Demand.

Toronto, Feb. 26.—The legislature of Saskatchewan has unanimously adopted a resolution urging upon the Dominion government that the duty on steel rails should be suspended until such time as the rail mills of Canada are capable of supplying the steel required for the construction of Canadian railways. In the course of the debate, Hon. J. A. Calder, minister of railways, stated that it was no exaggeration to say that there were from 550 to 600 miles of graded line in Saskatchewan uncompleted because of the impossibility of procuring rails.

Two large automobile exhibitions are now being held in Toronto. The principal of these held in the armories was opened last night, being the sixth annual show of the Ontario Motor League. There are 379 exhibitors, principally American firms, representing 160 different makes of cars. The number of cars displayed is about 500, representing a value of about $1,000,000. This is the largest display of the kind ever made in Canada.

The Manitoba Bridge & Iron Works, Ltd., at a meeting held in Winnipeg, decided to proceed with the construction of a new plant on a site near Winnipeg with a capacity of three or four times that of the present plant.

The Presto Light Co., of Indianapolis, will establish a Canadian branch plant at Merritton, Ont.

Will Add to Plant

Plans are being prepared by the Berlin Machine Works, Beloit, Wis., and Hamilton, Ont., for a new building to be devoted to the production of saw mill equipment and machinery. Arrangements for immediate work of construction will be made by President P. B. Yates upon his return from a trip through the southwest. The building will become the principal unit of the works at Beloit and will have dimensions of 300 feet by 275 feet and will be one and two stories high, making a floor space of 113,400 square feet. The company is occupying the office building which was erected last fall at a cost of $35,000.

Contemplates Addition

The Acklin Stamping Co., Toledo, O., reports an unusually heavy demand for sheet metal stampings. The outlook seems most encouraging and business is growing so fast that the company has found it necessary to add materially to its shop equipment. The board of directors is considering the advisability of building a three-story addition to the plant in the immediate future.

Meeting of American Institute of Mining Engineers

About 200 mining engineers and those interested in the mining industry were in attendance at the 102nd meeting of the American Institute of Mining Engineers, which was held at the Engineering Societies building, 29 West Thirty-ninth street, New York City, Feb. 19, 20 and 21. The convention opened Monday evening with an informal social meeting at the institute headquarters. The annual meeting took place on Tuesday morning and was featured by the election of officers for the ensuing year and by the adoption of several amendments to the constitution. The first technical session was held Tuesday afternoon and the papers presented and discussed were upon the subjects of "Fine Ore Sintering", "Electrostatic Ore Separation" and "Roll Crushing". The technical sessions were continued on Wednesday. The annual banquet was given at the Hotel Plaza, Tuesday evening. James Gayley acted as chairman of the banquet committee.

The annual election of officers resulted in the choice of the following nominations: For president, James F. Kemp, New York, N. Y.; vice presidents, Benjamin B. Thayer, New York, N. Y.; Karl Eilers, New York, N. Y.; Waldemar Lindgren, Washington, D. C.; secretary, Joseph Struthers. New York, N. Y.; members of the council, Joseph W. Richards, South Bethlehem, Pa.; John H. Janeway Jr., New York, N. Y.; Sidney J. Jennings, Dobbs Ferry, N. Y. The new directors named were E. B. Kirby, G. C. Stone and G. F. Rand.

Let Contract for New Galvanizing Plant

McCance Brothers, Pittsburgh, have awarded a contract for the construction of a complete galvanizing plant on a site recently acquired at Verona, Pa., near Pittsburgh. Ground will be broken immediately and the work, which will include the grading of the site, construction of railroad sidings, factory and office buildings, etc., will be completed about June 1. The cost of the plant will be about $125,000.

Foundrymen's Convention in Buffalo in September

The foundrymen's convention, which was to have been held in Buffalo in June, probably will be postponed to the week beginning Sept. 9. Maj. Joseph T. Speer, president of the American Foundrymen's Association, is now endeavoring to obtain the views of the members of the executive committee of this organization relative to the postponement of the annual meeting date. Of the allied associations, the American Brass Founders and the Associated Foundry Foremen have already agreed to hold their annual gatherings in September.

As no satisfactory building would be available in June for the exhibit of foundry supplies and equipment which was to have been conducted by the Foundry & Machine Exhibition Co., at the time of the meetings of the allied foundrymen's associations, it became necessary either to eliminate this feature of these gatherings, or to postpone the date of the conventions. The Broadway Exposition building, Buffalo, where the foundry show is to be held, is now undergoing extensive repairs which cannot be finished until mid-summer, although when this work was undertaken several months ago, it was believed that the building would be available for the exhibit in June.

The postponement to September will permit of conducting the usual foundry equipment show and simultaneous annual meetings of the American Foundrymen's Association, American Brass Founders' Association and the Associated Foundry Foremen, will be held.

Plan Furnace Rebuilding

Drawings have been prepared and bids are being asked for the construction of a new stack, equipped with dust catcher, down-comer, etc., to be erected by the Northern Iron Co., at Port Henry, N. Y., to supplant its present stack. Frank C. Roberts & Co., Philadelphia, are the engineers.

Large expenditures for the installation of safety devices and systems in its different plants which are calculated to guard the workmen from the danger of accident or bodily injury, continue to be made by the United States Steel Corporation. Within the past ten days there has been appropriated by the finance committee of this interest the sum of $100,000.

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Business, Politics and the Mob

Governor Woodrow Wilson, in a recent speech at Chicago, said, "Business and politics must be separated. Give politics a chance without the domination of special privilege and great wealth." A business man who is perfectly content with conditions as they are would agree with Governor Wilson, as would also the agitator, who would like to see the influence of business men entirely eliminated from politics. A man who believes that the present tariff should be continued forever, and that there should never be any kind of regulation of business affairs, would be perfectly satisfied to see business and politics absolutely divorced. Many business men in the past have felt that if they could only be let alone in their business so far as the government is concerned, it would be the best thing that could happen, and probably there are still a few of that opinion. The best interests of the country, however, demand that neither the rattle-brained agitator nor the ultra-conservative business man shall have his way.

All business men will agree that there has been too much governmental interference with business, but the really progressive business man appreciates that business cannot be, and ought not to be, entirely separated from politics, which Webster says is the "science of government of a nation or state, the preservation of its safety, peace and prosperity, and defense of its existence and rights against foreign control or conquest, the augmentation of its strength and resources, and the protection of its citizens in their rights, with the preservation and improvement of their morals." As long as business affects to a very large extent the welfare of the people, it cannot be separated from politics. A certain amount of regulation of business there must be. There must also be freedom from unnecessary interference with it.

There are great men in business, men of high purposes and lofty ideals, and their influence is needed in politics. Judge Gary said, in a recent address, that unless the capitalists and corporations, the wealth of this country, assume the leading position in the fight to remedy evils, that action will be taken out of their hands by the mob. To separate politics from business would be to turn the country over to the mob. Activity of business men in politics will prevent the country from being governed by the mob.

Splendid Record in a Worthy Cause

The enlarged scope of the work being done by the United States Steel Corporation for the benefit of aged and disabled employes is well portrayed in a detailed report of the officers administering the trust of the United States Steel Corporation and Carnegie pension fund, made in connection with a financial statement covering the disbursements of the past year, which was recently published in part in these columns. The summarized facts regarding the cases that came up for attention before the pension board in the period are illuminating in disclosing the systematic manner in which the leading steel interest is endeavoring to discharge its moral obligations to those who have earned the debt by the rendering of faithful service. Furthermore, the report is the first to be made since the establishment of the fund, Jan. 1, 1911, covering all subsidiary companies of the Steel Corporation.

It is shown that on Jan. 1, 1911, there was assumed 1,152 active pension cases, of which 623 came from the Carnegie relief fund and 529 from the pension department of the American Steel & Wire Co. During the year, 565 new cases were added and there were 111 deaths among pensioners on the list, leaving, on Jan. 1, 1912, a net total of 1,606 active cases.

During the year, the pension committee retired 549 employes from active work and made them beneficiaries of the fund. Of these, 178, or over 33 per cent, were compulsory retirements, 298 or 54 per cent were at the request of the employes, 49 were at the request of the employing officers and 24 by reason of permanent incapacity. For these 549 cases, the average age was 66.66 years, the length of service 30.40 years and the pension $20.75 monthly. In three cases, the maximum allowance of $100 monthly was made. Of the uncompleted accident benefit, death benefit and pension cases in the hands of the Carnegie relief fund on Dec. 31, 1910, which obligations were assumed by the pension fund on Jan. 1, 1911, all were disposed of in the year with the exception of 12 death benefit cases in which complete information was difficult to obtain. On Jan. 1, 1912, there were 56 cases on the active accident list. In the great majority of these cases, recovery is not expected owing to the nature of the injury and to the age of the disabled employes. There were also 119 active death cases in which death benefits are being paid by monthly installments, expiring Sept. 1, 1915. The total disbursement in the past year, covering all the aims of the fund, were $281,457.37.

There is always something impressively eloquent in facts and figures covering a record of actual accomplishment in a worthy cause. It transcends incalculably that criticism which likens itself to mere fault-finding in the abstract because it will not, or more probably cannot, through lack of practical knowledge, suggest the way toward betterment. Much of the harsher note of criticism

of the Steel Corporation labor policies that has been recently sounded in various quarters partakes of this character. In the pension work being actually carried on by the Steel Corporation, there is the opportunity presented to all critics to show their sincerity by a few words of unstinted approval.

Development of Iron and Steel Exports

Considerable thought is being given to the question of how far the American iron and steel industry is able to develop an export trade under the conditions which have existed in the past ten years. These conditions, it is recognized, have been different in several respects from those which formerly obtained. A prime need in this discussion is undoubtedly an exact presentation of our exports over a long period of years. It is a curious thing that this is lacking. We have compiled a table, presented below, showing the tonnage of iron and steel exports, beginning with 1890, and believe the statement is correct that this is the first time the tonnage exports in the earlier years have been presented other than in entirely fragmentary form. It is curious that such should be the case. The explanation probably is that prior to the decade of the nineties imports were heavy and all the study of the American iron trade, among both producers and consumers, was of the imports. In the columns of the trade journals of those early years, the statistics of iron and steel imports were presented regularly in detail, and the monthly and annual fluctuations, with their causes and results, were fully discussed. In the nineties, imports were relatively unimportant, and the relief from imports seemed to content the trade. There was little aspiration towards an export trade.

In the following table there are shown the iron and steel exports in gross tons from 1890 to the present time, and as observed, we believe the figures for the early years are here presented for the first time:

IRON AND STEEL EXPORTS—GROSS TONS.

1890	52,478	1901	790,857
1891	46,030	1902	372,398
1892	47,834	1903	326,590
1893	73,216	1904	1,167,710
1894	81,234	1905	1,010,255
1895	89,389	1906	1,325,740
1896	203,347	1907	1,301,979
1897	616,605	1908	964,242
1898	901,427	1909	1,243,467
1899	942,689	1910	1,537,943
1900	1,154,284	1911	2,187,809

It must be understood that the above figures are not complete. They represent the totals of the iron and steel commodities of which the government has returned the weight in its monthly and annual reports, the weight being given sometimes in pounds, sometimes in gross tons. Occasionally commodities have been taken out of the weight class, while as the export business developed many commodities have been put in the weight class. In no case, we believe, have exports of any magnitude occurred without the government placing the item in the weight class, so that while in the early years only a few commodities were returned by weight, we regard the totals as we have just ascertained them to be entirely adequate for comparative purposes, because commodities not then returned by weight were exported, if at all, only in negligible quantities.

The most striking feature of the above table is that exports rose to a high point and then experienced a great drop, afterwards rising to a still higher point. In the six years, 1890 to 1895 inclusive, they did not fall as low as 45,000 tons nor rise as high as 90,000 tons. We may pass over that period entirely as showing exports of no moment whatever. From 1895 to 1900 inclusive, there was a gain year by year, the 1900 exports being 13 times those of 1895 and nearly six times those of 1896. For three years after 1900, we see a progressive decline, whereby the 1903 exports were only 28 per cent of those of 1900. Thereafter an increase occurred, with no important backsets, whereby 1911 exports were 6.7 times those of 1903.

This is the history, written by statistics, of two great movements. The first was one in the cruder materials, at a time when production costs were very low and when there were no selling facilities for conducting a widespread campaign. The second was in the more finished products, at a time when production costs were higher but when a definite selling organization was being built up to distribute American products over a wide area. In the first movement, the material was sold chiefly in countries which had producing industries of their own, pig iron, billets and sheet bars being sold to mills which would work up the material into finished products. The second was chiefly of finished products, sold in the districts in which they would actually be consumed. The first movement was participated in by many producers; in the second the great bulk of the business was conducted by the United States Steel Corporation through the United States Steel Products Co., which began operations on Nov. 1, 1903. The date, indeed, can almost be read from the table above. It was in the year of least exports since 1896.

Of the 2,187,809 gross tons of iron and steel exported from the United States in 1911, between 80 and 85 per cent was by the United States Steel Products Co. This is a definite export trade which has been built up since 1903. It has no relation or connection with the export trade which reached its maximum in 1900, the year before the United States Steel Corporation was formed. The difference in the two movements can be shown by a percentage analysis. In the table below the percentages of the respective totals are shown by items for the years 1900 and 1911:

	1900.	1911.
Scrap	4.3	3.6
Pig iron	24.8	5.5
Billets, sheet bars, etc.	9.3	13.7
Wire rods	1.8	1.0
Rails	30.8	19.2
Structural	5.9	10.2
Plates and sheets	4.8	17.0
Steel bars	7.0	6.5
Wire	6.8	10.5
Nails	3.5	3.6
Pipes and fittings	...	9.0
Tin plates	...	2.8
Miscellaneous	1.0	0.4
Total	100.0	100.0

Pig iron, it will be seen, constituted one-fourth our exports in 1900, but only 5.5 per cent in 1911. Rails decreased from over 30 to less than 20 per cent. Wire increased by one-half, and two other highly finished products, pipe and tin plate, made their appearance

Vigorous Protests Against Tariff Revision

Manufacturers Tell of the Ruinous Effects Which Would Result From Enactment of Underwood Bill---American Standard of Living Threatened

Willis L. King's Reasons for Opposing Revision of the Tariff

"First: Because the tariff of 1909 barely affords the protection necessary to compete with foreign countries on our eastern coast, and does not do so on the Pacific coast.

"Second: Because the low cost of labor and low freight cost of assembling raw materials abroad, will always prevent our successful competition.

"Third: Because there is no economic advantage to be gained by consumers of steel products, in that prices are, and have been for some time, very low in this country, and the large excess steel capacity here will take care of any demand that may arise in the future.

"Fourth: Because the steel industry is now operating unprofitably, and the added burden of foreign competition would compel drastic reductions in wages and the closing down of many plants.

"Fifth: Because foreign steel can be transported to our eastern seaboard at one-third to one-half less than from Pittsburgh, and foreign vessels would carry the freight, to the great injury of our railroads and their employes.

"Sixth: Because there is, as yet, no reliable basis of comparison as to costs here and abroad, and it is manifestly unfair, as well as unbusinesslike, to reduce duties until such information has been obtained from the tariff board, which, I believe, is now trying to secure this data.

"Seventh: Because a reduction in the tariff on iron and steel products would be legislation in favor of foreign manufacturers and against our own flesh and blood. I make this statement with great confidence on the authority of St. Paul, who says: 'But if any provide not for his own, and especially for those of his own house, he hath denied the faith and is worse than an infidel.'

"All these special reasons can, however, be summarized in one, namely, the question of public policy. For an inevitable reduction in wages and enforced idleness of the workmen, following a reduction in the tariff, will add alarmingly to the spirit of unrest so apparent, even under the high wages now paid, and I would bespeak your earnest consideration of this question."

Steel and iron industries representatives addressed the senate finance committee on Wednesday morning in their general protest against the passage of the proposed Underwood tariff bill. Owing to the importance of the meeting the committee met somewhat earlier than usual and the attendance of members was uncommonly large. The steel representatives present were: C. D. Dyer, of W. P. Snyder & Co., iron ore; James A. Campbell, of Youngstown Sheet & Tube Co., steel pipe; W. H. Rowe, of Pittsburgh Steel Co., wire nails and fencing; W. U. Follansbee, of Follansbee Bros. Co., tin plate; E. T. Weir, of Phillips Sheet & Tin Plate Co., tin plate; Willis L. King, of Jones & Laughlin Steel Co., structural shapes and plates; S. P. Ker, of Sharon Hoop Co., hoops and cotton ties; W. S. Horner, of American Rolling Mill Co., sheet steel; Frank Tenney, of Pennsylvania Steel Co., billets, blooms and slabs; J. G. Butler Jr., of Brier Hill Steel Co., merchant pig iron; Leonard Peckitt, of Empire Steel & Iron Co., pig iron. George S. Whyte, Chicago, of Macomber & Whyte Rope Co., wire rope; Garrett Cochran, Williamsport, Pa., of Williamsport Wire Rope Co., wire rope; Josiah T. Rose, Atlanta, Ga., of Atlanta Steel Co.; R. D. Campbell, Pittsburgh, Pa., of Allegheny Steel Co.; Anson Mark, Zanesville, of Mark Mfg. Co.; G. E. Block, Chicago, of Inland Steel Co.; W. P. Worth, Coatesville, Pa., of Worth Bros. Co.; D. B. McClelland, Pittsburgh, of Spang Chalfant & Co.; J. A. Rogers, Philadelphia, of Metal Mfg. Co.; H. P. Miller, Philadelphia, of National Alloy Co.; Robert F. Herrick, Boston, of Textile Machinery Co.; A. P. White, Youngstown, of National Light & Thorium Co.; E. A. Langenbach, Canton, O., of United Steel Co.; Harry R. Jones, Canton, O., of United Steel Co.; George W. Wright, Worcester, Mass., of Wright Wire Co.; W. Pierrepont White, Utica, N. Y., of Utica Drop Forge & Tool Co.; Benedict M. Holden, of Standard Roller Bearing Co., Philadelphia.

George S. Whyte, of Chicago, representing the wire rope interests, said that wire rope is made in New Jersey, Massachusetts, Pennsylvania, Illinois, Missouri and California. It is an industry which would be seriously affected by a reduction of the tariff to 20 per cent ad valorem. The Canadian tariff is 25 per cent with a "dumping clause" added, and the proposed reduction would merely be an invitation to Canadian manufacturers to invade the American market. American wire rope is of high quality and 70 per cent of its cost is labor. If the duty be reduced, the English and German manufacturers could put their product on the dock in New York cheaper than the Chicago manufacturer could land his there. The only recourse of the American manufacturer

would be to cheapen his quality or reduce wages. Mr. Whyte felt that the wire rope makers of the United States would never deliberately lower the quality of wire rope because human life is so largely dependent upon it, being largely used in mines, elevators and on vessels and dredges. Mr. Whyte was quizzed by Senator Williams, who is inclined to take a cynical view of manufacturing, but he met the senator squarely on every point raised.

Garrett Cochran, of Williamsport, Pa., followed, saying that wire rope was a highly specialized product and is not a safe and proper article in whose manufacture to economize. The security of human life is based upon the integrity of the manufacturer. He did not consider that the foreign cables reached the efficiency of the American cable, as they do not have the high speeds to contend with in Europe that we have here. Speed adds about four times to the strain on the rope. He did not think that the tariff should be reduced under any circumstances.

The steel men were introduced by Senator Oliver, of Pennsylvania. He said:

Senator Oliver Addresses Committee

"The men who are here today are representatives of the independent iron and steel manufacturers in various lines. The impression has gone abroad throughout the country, and many who are not familiar with conditions in the iron and steel business, consider it to be the fact, that when you hit the iron and steel trade or industry in any way, or pass any law affecting it, you are simply legislating with regard to the United States Steel Corporation. The presence of these gentlemen this morning is a complete refutation of the idea or the theory that the United States Steel Corporation even dominates the iron and steel industry of the United States. These men are all — some of them throughout their entire line of business, one or two of them throughout their entire line of manufacture, and all of them with regard to some one product or another — direct and active competitors of the United States Steel Corporation.

"In the state of Pennsylvania, there is a very considerably greater tonnage, a very much greater tonnage, produced by independent manufacturers than by the Steel Corporation and its subsidiaries. One of the mills or companies represented here this morning, for instance, is an establishment that was founded in the city of Pittsburgh as early as about 1850 in a small way. It has grown from that time to this until it has an invested capital approaching something like $50,000,000. It is still owned and operated actively by the sons and the grandsons of the two men who established it in the early fifties. It is strictly a private, independent concern."

The Chairman: "How many men are employed by this concern?"

Senator Oliver: "How many men do you employ, Mr. King?"

W. L. King: "From 16,000 to 18,000 men."

The Chairman: "You refer to the well-known corporation of Jones & Laughlin?"

Senator Oliver: "Jones & Laughlin; yes, sir. They manufacture everything from pig iron down to wire, wire nails, tin plate. Quite a number of their wire plants, their tin plate plants, and a number of their other plants, have been built and established since the organization of the United States Steel Corporation, and in active competition with them. They were not in the wire business ten years ago; they were not in the tin plate business ten years ago, but they are very large manufacturers of both articles today.

"On the other hand, at the other extreme, there is one young man here today who was a clerk in my office in 1899, working at a salary of $100 a month. He left that office to accept employment in one of the tin plate plants of the United States Steel Corporation, worked for them for about two years, and then left them, borrowed a little money, and took an interest in a small tin plate plant, which he established himself. He is now at the head of the concern, operating successfully, and they have two large independent tin plate plants running today. I mention that as an evidence that the period of opportunity for young Americans has not passed, and that there is just as much opportunity for a young man to build himself up today as there was in the early days of the republic."

Senator Clark: "Even against the Steel Corporation?"

Senator Oliver: "Even against the Steel Corporation."

Line of Demarkation

Senator McCumber: "Mr. Oliver, I wish, at least for my benefit if not for that of the entire committee, you would, in some way, signify where the line of demarkation lies between what you call the 'independent' manufacturers and what you call the other manufacturers. Does it lie in the size, or in the fact that some run a single plant, and others run many subsidiary plants?"

Senator Oliver: "Not at all."

Senator McCumber: "I should like to understand just where the line is, so that we may separate them."

Senator Oliver: "I think I can state that clearly."

Senator McCumber: "You are speaking now for the 'independent' manufacturers. I want to know what they are."

Senator Oliver: "To use a scriptural illustration, this is the division between the sheep and the goats. The Steel Corporation is on one side, and all the others are on the other side."

Senator McCumber: "Then when you speak of the 'independents' and the others, you take the United States Steel Corporation as the goat?"

Senator Oliver: "I put the United States Steel Corporation on one side and the 'independents' on the other. Now, whichever one is the goat, you can just pick out for yourselves; but that is the dividing line."

Senator McCumber: "The point I want to get at is this, senator, so that we may have it clearly upon the record. It is that you simply distinguish, in speaking of the 'independents', between practically all others and the Steel Corporation?"

Senator Oliver: "Yes; the United States Steel Corporation on one side, and all others on the other. There is what you might term an intermediate class in the iron and steel industry, consisting of great corporations like the Bethlehem Steel Co., the Pennsylvania Steel Co., the Cambria Steel Co.—which, by the way, is represented here today—and similar concerns. They are independent and competitors, but they are great, big corporations of themselves."

Senator Clark: "You include those in the 'independents' of whom you speak?"

Senator Oliver: "Of course, I include them all in the 'independents'."

Senator McCumber: "And you object to the slaughtering of all of the sheep in our attempt to scratch the goat?"

Senator Oliver: "In your attempt to scratch the goat; and you cannot more than scratch him, because while this proposed bill is a menace to the whole iron and steel industry, the Steel Corporation itself is better fortified to stand up against it than any of the others. To the smaller concerns, the men who have every dollar they own invested in this business, the men who would be absolutely ruined and driven to beggary by the enactment of this law, by the injury that would result to the steel business generally, this is an exceedingly

serious matter. They are the ones that will suffer by the enactment of this law, because they have no recourse. They have not unlimited capital behind them. They have not reserves of raw material in the shape of immense bodies of ore and coal; and they have not the financial ability to stand up against this proposition. These men would be ruined; and they are the men who are represented here today."

Senator McCumber: "And they have not got coal and the limestone and the iron, all together, almost nearly together, where they can be utilized with the least cost?"

Senator Oliver: "They have not got, as they have in one section of the country only—that is, in Alabama—everything gathered in one place. We must bring our ore—and by 'we', I mean our manufacturers in the Pittsburgh district—1,500 miles."

Senator McCumber: "I am much obliged to you, senator, for giving us that explanation. Now I shall be obliged if you will carry it a little further, and state to the committee what proportion, in percentages, of the manufacture of iron product is produced by the United States Steel Corporation, and what proportion by all of the others for whom you speak?"

Senator Oliver: "As nearly as I can come to it, the United States Steel Corporation, when it was organized nearly 11 years ago, was supposed to control about 60 per cent of the tonnage of iron and steel. Today it controls a little less than 50 per cent. But I want you to note this difference: In value of output I do not think the United States Steel Corporation controls more than from 30 to 40 per cent, because the United States Steel Corporation is engaged almost exclusively in the production of what is known as big steel, tonnage steel, steel rails, steel billets; and it goes to only a small extent into the lines of what you might call ultimate-use steel—smaller sizes, smaller articles."

Senator McCumber: "It produces for the manufacturers."

Senator Oliver: "For instance, the crucible steel industry, which appeared before you last week, produced only about 75,000 tons of steel a year—altogether, of all kinds of steel. I think Mr. Ramsey said they produced about 120,000, but of the finer grades only about 75,000. That 75,000 tons of steel, in value, would represent probably more than half a million tons of the average product of the Steel Corporation. These men here carry their lines of manufacture largely down to the end where it is used by the consumer, and where it is not used simply by another manufacturer as a raw material."

Senator McCumber: "I am speaking of value and not of weight."

Sen. Oliver: "In value, I think, while it is mere guess-work on my part, and based only upon my general knowledge of the business, the output of the United States Steel Corporation does not amount to much more than 30 per cent of the value of all of the iron and steel products of the country that go to the consumer. What do you think about that, Mr. King?"

W. L. King: "I should think it was a little larger in value than 30 per cent.'

Senator Oliver: "You should? I may be mistaken in it, then. I should say certainly not to exceed 40 per cent, because you must remember that big tonnage means low values. For example, a steel rail sells at $28 a ton, and costs something like $21. Take the manufacturer of crucible steel. He will sell his product, some of it as high as 50 and 60 cents a pound, running up toward $1,000 a ton. These men are almost exclusively men who manufacture for the consumer. Some of them go a long way back."

Senator Williams: "Do they buy much of their raw material from the United States Steel Corporation?"

Photo by Pack Bros., Washington, D. C.

THE SENATE FINANCE COMMITTEE LISTENING TO ARGUMENTS OF THE STEEL MANUFACTURERS UPON THE METAL SCHEDULE OF THE UNDERWOOD BILL

Left side, reading from foreground: Senator Heyburn, Senator C. D. Clark, Senator Smoot, Senator McCumber.—Head of table: Senator Penrose.—Right side, reading from foreground: Senator Williams, Senator Johnson, Senator Simmons, Secretary Stewart.—Leaning against bookcase: Willis L. King, Pittsburgh, Pa.

Senator Oliver: "Some of them, I have no doubt, get quite a good deal of it from them. Some of them make their raw material themselves."

Senator Williams: "They buy the steel in a midway process toward their products?"

Senator Oliver: "In a midway process, and finish it."

Senator Williams: "They finish it to still more finished products?"

Senator Oliver: "But some of them—for instance, Mr. Campbell, of the Youngstown Sheet & Tube Co., who will address you here—that is a concern that

has been established and absolutely built up since the United States Steel Corporation was organized. I do not know what its capital is, but it runs away up into the millions, and it might be called one of the numerous offsprings of the organization of the Steel Corporation. The men who perhaps were thrown out of positions by the organization of the Steel Corporation gathered together their friends and their money, and started in, in a small way, and have built up businesses of their own. The first thing to start with is the first process in the manufacture of iron and steel, which is pig iron; and I will now introduce to you J. G. Butler Jr., of the Brier Hill Steel Co."

Mr. Butler Tells About Pig Iron Costs

Mr. Butler then presented the following statement:

"On April 29, 1909, as chairman of a committee I submitted to the senate finance committee, a brief on iron ore, pig iron and scrap. The information and views contained in this brief hold good today, and to save time, I respectfully refer you to this brief.

"There has been considerable reduction in the cost of making pig iron, in various localities, as will appear.

"The duty on pig iron under the act of 1897 was $4 per ton. This was reduced to $2.50 per ton in the act of 1909, a reduction of 37½ per cent. The Underwood bill proposes an ad valorem duty of 8 per cent. With pig iron valued at $15 per ton this would be equal to a duty of $1.20. The average value of pig iron exported from Great Britain in 1911 was $13.30 per ton and on this value the duty of 8 per cent would be only $1.064 per ton. This would be a reduction of over 73 per cent from the duty prevailing before August, 1909. Conditions have been such in the United States during the several years past that it is by no means certain that the reduction made in 1909 was advisable. A further reduction in the rates proposed in the Underwood bill would open the home market to foreign competition.

EXPORTS OF PIG IRON FROM GREAT BRITAIN AND GERMANY, 1906-1911.

	Great Britain. Quantity, Tons.	Great Britain. Value, Pounds.	Germany. Quantity, Tons.
1906	1,489,827	4,354,520	480,574
1907	1,794,333	5,630,048	275,170
1908	1,201,060	3,348,494	257,849
1909	1,010,351	2,772,417	471,045
1910	1,045,661	2,972,251	786,854
1911	1,065,863	2,912,099	829,393

"Both England and Germany, the largest producers of pig iron outside of the United States, produce largely in excess of their own needs. They export large quantities annually, amounting in 1911 to about 2,000,000 tons, which amount could be very considerably increased if a profitable market could be found in the United States.

"If there is to be an increase in our importations of pig iron, there must necessarily follow a decrease in our consumption of Lake Superior iron ore. Large quantities of Lake Superior iron ore will find their way into New York, Pennsylvania, and some other states whose pig iron industry would be seriously affected by an increase in our imports of pig iron. If we should make less pig iron, we would consume less Lake Superior ore and smaller quantities of finished iron and steel, less coke, and so on.

"The whole matter is, therefore, reduced to a question of relative costs. The department of commerce and labor has determined the average cost of pig iron in the United States as $14.01 per ton. This figure based on the actual cost on the companies' books of a large part of pig iron production includes all the large steel companies which have plants in general more economically situated than the smaller companies, especially those smaller companies whose furnaces are situated near the seaboard. These latter would have costs considerably above this average, probably over $15. Of course, the seaboard plants would feel foreign competition more severely than those further inland, which are to be reached by the foreigner only by payment of rail freight to destination.

"Foreign costs are difficult to obtain, but the best published figures show a cost of $9.48 per ton for the Cleveland district in England, $8.71 for the Luxemburg-Lorraine district, and $10.16 for other parts of Germany.

"If we take the foreign costs as approximately $10 per ton and those of the eastern district in the United States as $15, there is a difference in costs of $5 a ton in favor of the foreign producer. A portion of this is covered by freights which must be added to the foreign costs to reach the market. The ocean freight on pig iron is very variable. On account of our exports being of more bulky character than our imports, there are frequently times when pig iron is welcomed at merely ballast rates. The ocean freight seldom exceeds $1.60 per ton. Freight from the foreign works to their ports of shipment would vary but would hardly exceed 90 cents per ton. Thus freight might cover $2.50 of the difference in cost, leaving at least $2.50 which should be covered by a protective duty if the plants exposed to foreign competition are to live. Figures of comparative cost can only be approximate, but it is evident that the proposed duty of about $1 per ton on pig iron would open American markets to the foreign product and cause disaster, particularly to the smaller concerns not far removed from the Atlantic seaboard.

"Furthermore, costs in this country have been increasing and probably will continue to increase. The decline in the iron content of Lake Superior ore which increases costs of transportation and smelting per ton of pig iron; the rapid exhaustion of the coking coal reserves which make it necessary to use supplies mined at greater cost or transported longer distances; the tendency to higher wages which accompanies a rise in general prices; are some of the causes of increased costs. And it seems probable that all these causes will continue to operate in that direction for some time to come. Therefore, a tariff rate which at present seems just may not long remain so, and it is for this reason that the rate established by the act of 1909 and tried for only a short time under exceptional circumstances, might not in future prove adequate to afford protection in this industry.

"I submit herewith, on separate sheets, average book costs of pig iron

PRODUCTION OF PIG IRON IN THE UNITED STATES.

	United States.	Germany.	Great Britain.
1906	25,307,191	12,473,067	10,109,453
1907	25,781,361	13,045,760	9,923,856
1908	15,936,018	11,813,511	9,056,851
1909	25,795,471	12,917,653	9,664,287
1910	27,303,567	14,793,325	10,216,745
1911	23,649,344	15,534,223	*10,125,000

*Estimated.

PIG IRON IMPORTS INTO UNITED STATES.
FISCAL YEARS.

	Tons.	Value.
June 30, 1900	61,100	$2,109,501
June 30, 1901	39,325	1,355,231
June 30, 1902	158,961	3,367,172
June 30, 1903	956,198	16,830,592
June 30, 1904	191,135	4,047,167
June 30, 1905	122,977	2,989,069
June 30, 1906	271,790	7,778,884
June 30, 1907	564,846	15,654,767
June 30, 1908	204,092	6,201,808
June 30, 1909	104,655	3,509,086
June 30, 1910	237,594	6,289,729
June 30, 1911	206,184	6,056,503

of different qualities. I also submit tables showing imports and production."

One of the points strongly urged by Mr. Butler in his testimony was, on Wednesday, that the tariff should be taken out of politics. He thought the tariff should be studied by a board of experts and that no changes should be made that did not have intelligent consideration. He said also that ferromanganese is a form of pig iron and that the only concern making it in the United States was the Steel Corporation. He thought that a real service could be rendered to the "independent" interests by placing ferromanganese on the free list.

Mr. Peckitt Opposes Lowering Pig Iron Duty

President Leonard Peckitt, of the Empire Steel & Iron Co., spoke as follows:

"I represent the Empire Steel & Iron Co., of Catasauqua, Pa. We are what is known in the trade as producers of merchant pig iron, having no finishing mills of our own, and I shall, therefore, confine myself to that commodity and to iron ore in addressing you at this time.

"My impression is that the Dingley bill called for a duty of $4 a ton on pig iron, and that the Payne-Aldrich bill reduced the amount to $2.50. The Underwood bill now proposes to make the duty 8 per cent ad valorem, which I believe means 8 per cent of the price of foreign iron, f. o. b. port of shipment, and which I am afraid would be a serious handicap to us.

"In citing an example as to why in my opinion the rate recommended by Mr. Underwood is too low, I might mention English Middlesboro pig, which would doubtless be heard from to a serious degree, and perhaps from more than any other point at present on any such basis of duty as we are now considering so far as our district is concerned.

"No 3 Middlesboro pig today is selling at 49s, cash, or approximately $14.72, f. o. b. either Philadelphia or New York, which are, of course, the tidewater points that interest us directly, for our plants in Pennsylvania and New Jersey are within a radius of 60 to 80 miles of the seacoast.

The cost of Middlesboro iron itemized, is as follows:

No. 3, f. o. b. Middlesboro equals	$11.95
Duty, 8 per cent, equals	.95
River Tees due, 3d, equals	.06
Insurance, 3d, equals	.06
Freight—average, say 7s, equals	1.70
	$14.72

"The present rate of freight to New York or Philadelphia happens to be 9s per ton, but this is abnormal, and over the last two years I have known it as low as 5s per ton. I am also not unmindful of Chinese pig, which, under the present rate of duty, is to be found along our Pacific coast in considerable quantity, and which a year or so ago was also found in New York and Philadelphia. My opinion, however, is that it will be some little time before Chinese pig will be brought in in sufficient quantity to do much harm. But Middlesboro iron, of which there are at present more than a half a million tons stored on the other side, is really what I am afraid of just now.

"Our producing capacity is approximately 300,000 tons of pig iron yearly, and we are also miners of iron ore to a small degree, producing upwards of 200,000 tons annually from our New Jersey properties.

"The present average cost of pig iron in this neighborhood, which includes the Lehigh and Schuylkill valleys of eastern Pennsylvania, is about $13.75 per gross ton; and as many of the producers are without either fuel or ore of their own the cost may be considered as net, or without any profit on the ingredients comprising the cost.

"As the market for our product, owing to competition in other districts, is pretty much restricted within say a radius of 100 miles, and as the average railroad freight to point of consumption is at least $1 per ton, I am afraid foreign ore would close most of our furnaces hereabouts, except in boom

AVERAGE BOOK COSTS PER GROSS TON OF SPECIFIED KINDS OF PIG IRON SHOWING FURNACE COST AS GIVEN IN THE COST SHEETS (INCLUDING INTERMEDIATE PROFITS) TOGETHER WITH "ADDITIONAL COSTS" (DERIVED FROM PROFIT AND LOSS ACCOUNTING.) 1902-1906.

Items.	Bessemer Iron.	Basic Iron.	Southern Iron.
Tons produced	51,902,699	9,573,539	5,339,766
Net metallic mixture	$ 7.30	$ 7.14	$ 2.35
Coke	3.89	3.30	4.47
Limestone	.43	.47	.27
Labor	.77	.62	1.23
Other operating cost	.87	.77	1.20
Furnace cost	$13.26	$12.30	$ 9.52
Additional cost	.75	.52	.13
Total cost	14.01	12.82	9.65
Price gross metallic mixture	$ 4.07	$ 3.73	$ 0.95
Price net metallic mixture	3.97	3.64	0.95
Per cent yield	54.4	50.9	40.6
Price coke, net ton	3.37	2.90	2.54
Pounds coke	2,311	2,282	3,523

AVERAGE BOOK COST PER GROSS TON OF BESSEMER PIG IRON AND COST EXCLUDING TRANSFER PROFITS, DISTINGUISHING LARGE AND SMALL COMPANIES 1902-1906. (Made from Lake ore.)

	All companies (44,311,530 tons)		Large companies (40,873,250 tons)		Small companies (3,438,280 tons)	
Items of cost.	Book cost.	Excluding transfer profits.	Book cost.	Excluding transfer profits.	Book cost.	Excluding transfer profits.
Net metallic mixture	$ 7.36	$ 6.10	$ 7.38	$ 6.01	$ 7.20	$ 7.14
Coke	3.81	3.28	3.75	3.19	4.41	4.41
Limestone	.43	.43	.43	.43	.49	.49
Labor	.73	.73	.69	.69	1.26	1.26
Other operating	.80	.80	.79	.79	.82	.82
Furnace cost	13.13	11.34	13.04	11.11	14.18	14.12
Additional costs	.76	.76	.82	.82	.09	.09
Total cost	13.89	12.10	13.86	11.93	14.27	14.21

AVERAGE BOOK COST PER GROSS TON OF BASIC PIG IRON AND COST EXCLUDING TRANSFER PROFITS, DISTINGUISHING LARGE AND SMALL COMPANIES—1902-1906

	All companies (9,161,685 tons)		Large companies (8,466,492 tons)		Small companies (695,193 tons)	
Items of cost.	Book cost.	Excluding transfer profits.	Book cost.	Excluding transfer profits.	Book cost.	Excluding transfer profits.
Net metallic mixture	$ 7.15	$ 6.69	$ 7.17	$ 6.69	$ 6.90	$ 6.68
Coke	3.32	2.79	3.26	2.68	4.11	4.11
Limestone	.47	.47	.46	.46	.64	.64
Labor	.60	.60	.57	.57	1.06	1.06
Other operating	.75	.75	.71	.71	1.10	1.10
Furnace cost	12.29	11.30	12.17	11.11	13.81	13.59
Additional costs	.52	.52	.54	.54	.31	.31
Total cost	12.81	11.82	12.71	11.65	14.12	13.90

times, which on any such basis of duty would be a rare occurrence.

"I do not wish to be misunderstood in these statements and am speaking for the district as a whole, admitting at the same time that there may be one or two exceptions, who, largely self-sustaining in ore and coke, can doubtless manufacture at a somewhat lower cost, and which will surely be needed if the duty on finished products is to be cut to the Underwood schedule. A couple of years ago you may remember my position as regards the duty on pig iron and iron ore. At that time I contended that $2.50 on pig iron was as low as the industry would stand for a long time, and further thought that the duty on iron ore should be gradually reduced rather than made free at one sweep, which was afterwards modified by leaving it 15 cents per ton, as against 40 cents in the Dingley schedule. I shall, however, make no further claim for the retention of iron ore duty, feeling that the time has now perhaps come when all raw materials should be on the free list. But pig iron is not a raw material, and I, therefore, urge the present law makers to reaffirm the Payne-Aldrich rate of $2.50 as being imperative if the industry in this eastern section of Pennsylvania is to be preserved.

"I have been told on good authority that Mr. Underwood says the average cost of American pig iron is $12 a ton, and that every commodity should stand a fair proportion of the government revenue, which, generally speaking, may be about right. But unless there is to be a pronounced reduction of wages throughout this eastern section we cannot hope for any such costs. Owing to general business depression our total production of pig iron during last year was down to 143,728 tons, costing (all fixed charges included) $13.78 per gross ton.

"We employ from 900 to 1,500 men, depending on the number of furnaces in operation, and the maximum and minimum payroll over the last ten years was $416,150 to $782,566 per annum.

"The group of eastern Pennsylvania and New Jersey furnaces producing merchant pig iron have a combined output of approximately 3,250,000 tons, all of which would be equally affected by the proposed reduction of duty.

"In conclusion it, therefore, seems to me unfair to propose a rate of duty that will open a gateway for foreign pig iron to such an extent as to close our industries and practically ruin a business representing millions of dollars of investment and employing large numbers of men. I, therefore, urge you to do what you can to have the present rate of duty on pig iron continue.

"I have lately heard a good deal of talk about labor in iron and steel works particularly about blast furnace labor. Blast furnace operation, as has been stated, is a metallurgical process requiring continuous operation. Our system of changing the weekly shifts so that men in day turn may change to the night turn without interruption is a little different from the practice at most other plants and partly does away with the long turn of 24 hours. The change is made each Saturday noon and as an example we will suppose that the night shift having worked each night up to and including Friday night is now ready for the change; Saturday noon this night shift after a rest of six hours again reports for duty and works until 6 p. m., which you will notice after another rest of six hours places it in the day shift ready to begin the new week."

"Where do you get your iron ore from?" asked Senator Clark.

"From New Jersey, about 50 miles from our plant," replied Mr. Peckitt.

"From where do you mainly derive our importation of foreign ores?"

"Mainly from Cuba."

"I note that you seem to favor the admission of raw materials."

"Yes sir, the reduction of the duty would not sensibly stimulate imports. The duty is only 12 cents now on Cuban ore."

"Who uses Cuban ore?"

"Mainly the Bethlehem Steel Co. and the Pennsylvania Steel Co., which own their own deposits. Beyond that, importations of Cuban ore are very small."

Mr. Peckitt explained that New Jersey ores were magnetites occurring in veins of silicious rock. The necessity of crushing adds somewhat to the cost of the ore, but it is natively higher in metallic content than Lake Superior ores, which frequently have to be sorted and enriched. He estimated that it cost from $2 to $2.25 a ton to produce New Jersey ore.

Willis L. King Discusses Prices and Policies

Willis L. King, vice president of the Jones & Laughlin Steel Co., Pittsburgh, appeared on behalf of his stockholders and many thousands of workmen in his plants to protest against the proposed reduction. He maintained that the 1909 tariff barely protects the Atlantic coast and does not at all protect the Pacific coast industry. He maintained that the steel industry is now operating unprofitably and that any lessening of duty would result in a drastic reduction of wages and the closing of plants. Mr. King, after giving his reasons for opposing revision of the tariff (See page 504), said:

"Of the steel products that we make, wire, wire fencing, nails, spikes and cotton ties are placed on the free list by the Underwood bill, and the following reductions made in our principal products:

	Payne law. Per net ton.	Proposed law. Per net ton.
Steel bars....	$6.00	$2.00
Steel plates...	8.00	3.00
Structural	8.00	3.00

"These figures are based on 1 cent per pound at foreign ports. The placing of wire and other products on the free list is wholly indefensible, and the small duty specified above on other steel lines is entirely inadequate to allow domestic mills to operate at any profit in competition with foreign works.

"While lack of business and excess production have brought about such conditions amongst American manufacturers that prices are now unprofitable, it is certainly to their credit that wages have not been reduced; but with the additional competition from abroad, a serious reduction is inevitable. In my opinion, the standard of American living is in more deadly peril than at any other time in the last 50 years, and if any bill approximating the proposed house bill becomes a law, serious financial troubles and economic disturbances will result.

"I have not brought with me the cost of producing steel in this country, because you have this information in detail through several departments of the government. I am sorry that the foreign costs are not available, but the fact that England, Germany and Belgium export by

far the greater part of their production will convince you, I feel sure, of their ability to manufacture cheaply.

"In closing, I would ask your thoughtful consideration for this important subject."

Senator Williams requested Mr. King to resolve his tonnage into dollars and submit it to the committee later, saying:

"Workmen are paid in tons and not in dollars, and we want some basis of comparison as to earnings and wages."

Mr. King stated that his company was capitalized at $30,000,000 and had recently issued $25,000,000 in bonds to construct a new plant about 20 miles from Pittsburgh.

"Any bonus ever issued with your stock?" asked Senator Williams.

"No, sir. We have only one kind of stock and it was fully paid in."

Senator Williams asked him to prepare a statement of sales and wages paid for the past ten years for the committee and then inquired as to the dividends paid by the company in 1908.

"Four per cent," replied Mr. King. "We have only paid 4 per cent since the panic of 1907."

"Does that represent your total profits?"

"No, sir. No steel company could do business on a basis of only 4 per cent profits."

"What became of the balance?"

"It went into improvements."

"What proportion of profits went into the business?"

"I could not answer from memory."

"Put it into your statement, then," said Senator Williams.

"If the duties on iron and steel are reduced," asked Senator Simmons, "would you be able to hold your markets?"

"I don't think so."

Senator Simmons inquired how it was that American steel makers successfully met English competition in Canada notwithstanding the preferential tariff.

"We can get to Canada more cheaply than the English can, by reason of proximity and the cheapness of lake transportation. England has an advantage of preferential rates but we have a greater advantage in cheaper transportation," replied Mr. King.

"How is it that in those parts of Canada where you have no freight advantage you are still able to beat them out?"

"I think I can explain that," replied Mr. King. "That is a trade in special sections that are probably not available in England."

"How is it that you also successfully compete with them in Mexico?"

"Some steel goes there but it is largely rails and as I am not a manufacturer of steel rails I am not competent to give an intelligent opinion. I might say, however, that it might be good business policy to ship 10 per cent of one's product abroad at cost in order to cut down overhead expense and I think that is what the rail makers do."

"Would you not consider that as the United States can sell steel rails in neutral markets in competition with England, Germany and Belgium, she could also sell them in her home market?"

"That is a pertinent question but as I don't make steel rails I cannot answer intelligently. I think that England feels like us, that the home market is the best market."

"What is the price of structural shapes and plates in the home market?" asked Senator Williams. "Is the Steel Corporation price the same as that of the independents?"

"Yes, sir."

"How is the price fixed?"

"In the olden times," replied Mr. King, "almost from the beginning of trade it was determined by associations or by mutual arrangement; but there have been no such agreements since the Sherman law was passed."

"But since the Sherman law was passed they have been sold at practically the same price?" said Senator Williams.

"Yes, in general."

"How is that price arrived at now?"

"Why, usually one concern makes the market for the balance. It is strictly a competitive market. Competition makes a price that we are bound to follow. If the Corporation makes the price we follow, but anybody can make the price. Our salesmen go about all the time seeing all the buyers. Our experience is that the buyer does not need any guardian. We are in touch with the market every day and we quote what we consider to be the market price."

"Couldn't you undersell?" asked Senator Williams.

"We don't want to make any lower prices than we can help."

"Well, suppose that I was in the market with a large order?"

"In that event, senator, we would send a salesman to see you and we might shade the price a bit in order to get the business."

"But suppose I had a confidential quotation; it would not be right to disclose it?"

"We find the buyer usually has no scruples on that score."

"What are you doing in the export way?"

"The United States Steel Corporation has the export trade almost exclusively. They have made a business of it. We export nothing."

Senator Simmons then inquired if there did not exist a kind of friendly intercourse among the steelmakers, the effect of which was to maintain a general standard of prices.

"I presume you refer to the Gary dinners," replied Mr. King.

Senator Simmons disclaimed reference to any particular form of meeting, but said that he had gathered the general impression that the price of steel had not fallen in sympathy with other commodities after the panic of 1907, adding that he believed that there was no appreciable decline from 1907 to 1909.

"It is not a fact," replied Mr. King, "that prices were maintained at a fixed schedule. There was considerable sagging during that period but probably not as fast as there might have been. The question of prices was never discussed at these Gary dinners. No price was ever mentioned. The question of policy was simply dis-

Only a Reasonable Tariff Favored

(From the testimony of James A. Campbell.)

"We are in favor of as small a duty as will protect capital and labor in this country, and did not object to the Payne bill, as radical as it was in revising the iron and steel schedule. But we believe no further reductions of this schedule should be made until the tariff board has had time to make a thorough investigation into the cost of producing these materials in this country and abroad, and then congress can have all the facts and frame a bill in accordance therewith. Then, and only then, will we be content to leave this matter to the judgment of congress and the president to decide what is best for the country as a whole. At present, labor in this country is well employed at the highest wages ever paid, while the capital employed is receiving scant remuneration; and any congressman who votes to change this condition for the worse will be held accountable in the future, when these two forces come to realize what such a vote means to them.

"The country as a whole is prosperous and the people are happy and contented, and why disturb this prosperity and happiness by passing this bill, which is based on theory instead of facts?"

cussed. The steelmakers were persuaded not to do anything foolish, not to become panic-striken and thus make a bad situation worse. It had the effect probably of preventing a drastic decline, but there was, nevertheless, a gradual sagging of the market."

Mr. King stated that his company could have reduced prices as well as the Steel Corporation.

"Anybody can put prices down," said Mr. King, "but it is a different thing to keep the market up."

"Could the Steel Corporation put prices up?" asked Senator Simmons.

"No, sir. Not unless the demand for commodity existed."

"Can the Steel Corporation control prices?"

"No, sir; since it only produces 40 per cent of the country's total production. Any one can make a market."

"Have the independents ever declined to follow a rising market?" asked Senator McCumber.

"Sir, that would be asking too much of human nature."

"I want to establish responsibility for raising prices," said Senator Heyburn. "Do you say the independents are not responsible?"

"They would put the price up if they could; but it is the market that puts the price up. The law of supply and demand regulates it."

"Could prices be raised now?"

"No, sir."

"Suppose the Steel Corporation raised prices?"

"Then we would get the business. We are operating at 75 per cent of our capacity."

"But you couldn't supply all the trade?"

"The Corporation would simply get the overflow," replied Mr. King.

Mr. King explained that the Corporation employed about 200,000 men and the independents about 225,000. The independent plants, treated as units, are smaller than the Corporation plants and, therefore, require more men per unit. He added that when the Corporation was formed it produced 52 per cent of the tonnage and the independents 48 per cent. These percentages are now exactly reversed, the Corporation producing 48 per cent and the independents 52 per cent. The producing capacity of the country had increased one-third, he said, since 1906, but, of course, it is not all employed.

"Is any of the Steel Corporation's production used by the independents?" asked Senator McCumber.

"Yes, in semi-finished material such as billets."

"Have the independents ever led in reducing the price of steel?" asked Senator Heyburn.

"The Corporation thinks so. I think they have."

"Do the independents cut below the Steel Corporation prices?"

"Not for very long."

"What would the Corporation do today if the independents established a price?"

"I think they would meet it."

"Suppose you raised the price. Would they follow?"

"If the market sustained it."

"Who is responsible for prices?" asked Senator Heyburn.

"I don't think that either is responsible."

"Could you unite the independents?"

"Promoters have tried it, but have failed." said Mr. King.

"Who is the largest independent steel maker?" asked Senator Williams.

"I believe we are."

"What proportion of the total production is yours?"

"On the basis of 25,000,000 tons, about 5 per cent of the total."

"Who is next?"

"The Bethlehem Steel Co. They produce about 2½ per cent, but their product is highly specialized, such as guns and pumping machinery."

"If a small independent persistently cut under the market, what could the Corporation do to him?" asked Senator Simmons.

"Nothing whatever, so long as his bank account held out."

"What do you know about the Corporation's purchase of the Tennessee Coal & Iron Co.?"

"Nothing whatever; but I think they intend to use that for exports. Pig metal can be made pretty cheaply down there, owing to the proximity of coal and ore."

"Isn't it true that they were cutting prices?"

"I don't think so. As a competitor they did not amount to much. My idea of that purchase is that they acquired it for their export business."

"And thus eliminate Tennessee from the American market?" asked Senator Heyburn.

"Yes, sir."

"What is the freight rate on structural steel to the Pacific coast?"

"It is $16 a net ton.

"That is the same as for tool steel?"

"Yes, sir."

"It is the freight rate, then, that shuts structural steel from the Pacific seaboard?"

"Yes, sir."

"That works a great hardship to the Pacific coast," said Senator Heyburn, "and it is my opinion that we ought to get a lower freight rate on structural steel."

"I doubt if the railways could carry it lower for a profit," said Mr. King.

"That is what they tell you?"

"Yes, sir, that is what they say."

"Well, that may not be so," replied Senator Heyburn, "and I am not going to let up until I get a lower freight rate to the Pacific seaboard."

"I hope you may succeed," replied Mr. King.

Mr. Dyer Speaks for Ore Producers

Senator Oliver then presented C. D. Dyer, of the Shenango Furnace Co., who spoke as follows:

"The Lake Superior iron ore industry will not take up the time of the committee in making any special protest against the effect of reducing the tariff rate on iron from 15 cents per ton to nothing, except as it indicates a tendency to keep the market on the Atlantic seaboard open for foreign ore, to the exclusion of our home product.

"Shipments of ore from the Lake Superior region during the year 1911 were 35,000,000 tons and in 1910 and 1909 they were about equal, aggregating about 42,000,000 tons in each year, and the capacity of the region, measured by its facilities for transporting ore down the lakes, is about 50,000,000 tons.

"During 1911, 2,000,000 tons of foreign ore entered the United States—revenue to the government from which was less than $300,000.

"Practically no Lake Superior ore has been sold in what we term the eastern market for three years, and if the enlargement of the opportunities of the industry be a matter of concern, foreign ore should be subject to a tariff rate of at least 50 cents per ton, which is about 1 cent per unit of iron, as ores are measured in these days. Under such a condition and in order to deal in the east it would still be necessary for the Lake Superior ore producers to make a very considerable concession in the ideas with which they are accustomed to figure the values of their ore."

"To indicate the effect upon the general business of the country, as illustrated by the 2,000,000 tons of foreign ore received during the year 1911, and which produced to the government something less than $300,000 in the way of revenue, an estimate is made showing that had the equivalent of this ore been produced and transported from the Lake Superior region, over $3,000,000 would have been paid directly in wages to workmen engaged in mining, manufacture, transportation and other pursuits, and the national balance of trade would have gained over $6,000,000 in our favor.

Would Equal Difference

"It may be argued, and it is probably true, that a 50-cent tariff rate would have the effect of increasing the cost of the ore mixtures at eastern furnaces, but if so, such increase would about equal the difference between the cost of production at home and abroad, as is indicated by the market prices of the two products, and the effect would be to at least bring the Lake Superior producer and the eastern furnacemen together to negotiate. The tonnage involved would probably have a large influence in inducing the Lake Superior producer to make some concession, and perhaps the railroads to hold out some inducements to secure the business, as the present tariff rates of the railroads are merely paper rates and produce no revenue to speak of.

"To our minds the ore proposition is before congress in its function as presiding over the business of the country, to decide whether one department of that business might be called upon to contribute $500,000 to $1,000,000 to enable another department in the same business to actually increase its earnings by about $3,000,000.

"If we are to keep in mind in any province of business the idea of protection of American industries, the cause of American iron ore presents very convincing arguments in favor of a protective rate and we think that 50 cents per ton is the least rate which would have any effect in that direction.

"The status of the iron ore situation as far as Lake Superior is concerned is as follows: Since the panic of 1907, following the lead of the Steel Corporation not only at the mines but at our furnaces, while we have curtailed production and shut down here and there, in no instance has the high rate of wages that has been in existence been disturbed, neither at the mines, on the railroads, on the vessels or at the furnaces. As a matter of fact, the railroads have in the meantime advanced their labor. Roughly, 75 to 80 per cent of the cost of ore is represented by labor, either at the mine, the railroads, the lakes, or with the supply companies who furnish supplies. We have thought once or twice that we would have to liquidate labor and have been holding on with the hope of better things, until business would get over the dead center. There is no apparent hope for this in the immediate future and, with drastic tariff legislation, labor liquidation will be forced upon us whether we wish to consider it or not. The tariff, as far as ore, iron and steel is concerned, is no longer a protection to the industry and not even on the present rates a protection to the labor. If we are going forward on a protective basis we should at least have sufficient protection to protect the labor, without asking for protection possibly on our profits, and instead of being a protective tariff for the industry it should be called a protective tariff for labor.

Object in Buying Tennessee Company

(From testimony of Willis L. King.)

"What do you know about the Corporation's purchase of the Tennessee Coal & Iron Co.?"

"Nothing whatever; but I think they intend to use that for exports. Pig metal can be made pretty cheaply down there, owing to the proximity of coal and ore."

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"And thus eliminate Tennessee from the American market?" asked Senator Heyburn.

"Yes, sir."

Ore Rates Too Low

"Under the present tariff the rate on ore is too low, as well as pig iron. We have lost the Pacific coast to the foreigners in almost all departments and in 1911 there was about 2,000,000 tons of ore brought into the eastern market from foreign countries. Assuming this ore to be worth in the neighborhood of $8,500,000, there was displaced between $5,500,000 and $6,000,000 worth of labor to the miners, railroad employes, vessel employes, and others in the Lake Superior iron ore industry. In addition to this our furnaces on the eastern seaboard paid to foreign mines and vessel owners $8,500,000, which went out of the country. In prosperous times, even with the tariff of 40 cents a ton, foreign ore came into the country, but only to the extent that our labor could not produce it. Since the passage of the Payne-Aldrich bill, we have as above mentioned lost this business that we enjoyed in the east. The states of Minnesota and Michigan have imposed burdens in the way of taxes, which in many cases will run as high as 10 cents a ton on the ore produced from certain mining properties. The Canadian government at the present time is proposing to pay their manufacturers a bounty of $1 a ton on pig iron, and where the pig iron is made from Canadian ore an additional bounty of about 60 cents a ton, which is bound to stimulate production of iron ore in Canada to the point where there will be a very considerable surplus to be shipped to this country. Every ton of ore and every ton of pig iron imported displaces three tons of ore which could have been mined by American miners. Some of the foreign ores are mined by workmen receiving 40 cents a day: this is true in Spain. The miners of Lake Superior in underground work receive $2.65 per day or more, according to the nature of their work.

"Therefore, we should not only protest strongly against the Underwood bill but there should be a restoration of the duties on iron ore prior to the Payne-Aldrich bill, and also on pig iron, in my opinion, as its effect will simply be an economic one. Internal competition will keep the price of iron and ore within reason and in prosperous times there will be both pig iron and ore imported. In times of depression, however, I feel that our own labor should have every consideration and be furnished all the work possible, to the exclusion of giving the business to foreigners."

Chain Makers Protest

John C. Schmidt, president of the Standard Chain Co., Pittsburgh, Pa., was the first tariff witness before the senate finance committee on Friday morning. There are 32 chain plants in the United States employing about 5,000 men. The plants are mainly in Pennsylvania and Ohio, but New York, Indiana, Connecticut, New Jersey, Illinois and Missouri are also represented in the industry.

Mr. Schmidt strongly recommended the retention of the specific duty as it is a matter of great difficulty often

to distinguish by eye-sight the various grades of chain by various manufacturers as would be necessary under an ad valorem duty. He also added that the wages of handmade labor had advanced in recent years from 22 to 46 per cent; the machine-made labor cost has advanced 19 per cent.

Eli Atwood, of the Lebanon Chain Works, Lebanon, Pa., said that if the Underwood bill is passed he will have to go out of business. England delivered to the Cramps for a Chinese cruiser cable chain at $3.65 per hundred pounds, which is at a less price than it can be made in this country. He said that his principal business is in cable chains and that he had supplied many battleships and cruisers in this country, but that he could not possibly do so under a reduced tariff. He added that once when the Standard Oil Co. was building 36 vessels abroad, he tried to get the business, but found that he could not possibly come within 25 per cent of the English price.

Thomas F. Woodhouse, of the Woodhouse Chain Works, Trenton, N. J., presented a great mass of figures as to costs of manufacture here and abroad. He pointed out that there is some importation of certain grades of chain from Germany, under the present tariff, and said that if it could be stopped the added business would keep the American plants in this grade busy.

Greatly Affects Business

W. P. Worth, of Worth Bros. Co., Coatesville, Pa., said that his company would be greatly affected by the passage of the bill. He believed that the schedule should be submitted for adjustment to the tariff board before being submitted to the senate for passage. The annual production of the Worth plant is 350,000 tons. Mr. Worth said that his ores came from New Jersey, Spain, Nova Scotia and Lake Superior, the importations representing 33⅓ per cent of their consumption.

Horace A. Beale, of the Parkesburg Iron Co., Parkesburg, Pa., said that any reduction of the present duty of 1½ cents on charcoal iron boiler tubes would seriously disturb their business since they find their present business unprofitable.

W. U. Follansbee, of Follansbee Bros. Co., Pittsburgh, appeared in behalf of his own company and 14 other independent tin plate manufacturers. He condemned the Underwood bill as being ill-advised and poorly constructed, and got into a little tilt with the committee but came out ahead. He said that the ad valorem duty is unscientific and has been discarded by practically every country. He said that the independent manufacturers are now making 40 per cent of the tin plate of the country, although when the Steel Corporation was formed its works were making all of it.

Campbell Represents Pipe Manufacturers

The first witness before the senate finance committee on the metal schedule Thursday morning was James A. Campbell, of the Youngstown Sheet & Tube Co., representing a number of independent pipe manufacturing companies. Pipe, he said, is a highly finished product, passing through many processes of manufacture and for this reason carries a high labor cost, practically double that paid in foreign countries. If the Underwood bill becomes law, pipe manufacturers would lose the seaboard market because they could not meet the delivered price of foreign manufacturers on the coast. Mr. Campbell maintained that the Underwood bill is based upon theory rather than practice and that it would be time enough to consider it when the tariff board had passed upon it. Mr. Campbell's remarks were quite to the point and were in full as follows:

"I am here representing a number of the independent pipe manufacturing companies, some of which make pipe from their own ore and coal to the finished product, and some of which buy their skelp and plates and make it into pipe. House bill No. 18642, we understand, proposes to reduce the duty of $20 per ton in the Payne bill to 20 per cent ad valorem, or what would be equal to $6 to $8 per ton in the Underwood or present bill.

"We wish to protest against this bill for the following reasons:

"First:—The cost of assembling our raw materials here is much greater than abroad, due to the long distances which we transport our ore and coal, and consequently our cost of production is much greater.

"Second:—Pipe is a highly finished product passing through a number of different operations; namely, mining the ore and coal, smelting into pig metal, converting into steel, rolling into skelp or plates, and making into pipe, threading the pipe and making and threading the couplings; and for this reason carries a high labor cost, or as nearly as we can estimate including transportation labor, about $20 per ton. This cost is about twice that of the foreign maker and places us and our employes at a great disadvantage.

"Third:—Our transportation of the finished product from the Pittsburgh district, which is the center of production of this commodity, is greater than from abroad; greater to Boston, New York and Baltimore, by $1 per ton, to Gulf ports by $3.50 per ton, to Pacific coast and Texas points by about $8 per ton; so that our delivered price must necessarily be much higher than those of our competitors abroad, if there were no duty imposed by this country.

"Fourth:—We are opposed to ad valorem duties and in favor of 'specific', for the reason that goods are many times underbilled in order to reduce the duty; and further, for the reason that when values are normal here they may be low abroad, and this method of assessing duties would be very harmful to us.

"Fifth:—If this bill should become a law and we should lose a large part of our business at seaboard points, as we surely would, our operations would necessarily be curtailed and our costs would correspondingly increase, as it is a well known fact among manufacturers that only when operating to capacity can we produce at the lowest cost.

"Sixth:—Many of the foreign makers are as well equipped with modern plants and machinery as we are, for within five years several plants have been designed and erected abroad by American engineers with American machinery.

"Seventh:—The pipe manufacturers as well as all steel companies are operating at a less profit at present than can be continued for any great length of time, and if this bill should be passed by your honorable body and the president approves same, many of these companies must go out of business or be forced into the hands of receivers.

"If it is true that our cost of assembling raw materials and delivering

our finished product is greater, as we have stated, and that our labor cost is about double that abroad, it should be clear to every one that we must have some protection to enable us to compete with our foreign neighbor. This country was developed under a protective policy, and while we need less now than during our infancy, our employes are not yet ready to live as the foreign laborer lives. We do not know what duty is necessary to protect capital invested and our employes, as we have not the exact cost of producing these products abroad; but we are quite sure that if this bill becomes a law it would mean a revolution in business in this country and that labor of all kinds would suffer equally with capital. The Youngstown Sheet & Tube Co., which is the company I particularly represent, has invested $30,000,000 in a new and modern plant, and gives employment to 7,500 men. Owning our own raw materials and with the best equipment possible, we are in better position to compete under all conditions than many of the smaller and older concerns, and if we cannot operate under this proposed bill, what is to become of the hundreds of smaller companies, who are giving employment to hundreds of thousands of workmen all over this country? We manufacture sheets and wire products also, on which this bill proposes to radically reduce the duty, or place on the free list, and we protest against these reductions as well.

"When your tariff board has had time to bring you the information, it will then be time enough to determine what changes can be made that will be a benefit to the people as a whole, and any bill based on this information will be satisfactory.

"Today I have found some statistics on labor abroad in a report published in 1909, by the department of commerce and labor, and on pages 22 and 23, you will find the wages paid in Germany, which substantiates the statements I have made that the labor cost abroad is not over one-half of that paid in this country.

"This report states that coal miners' wages in Germany are 97 cents per day to $1.43 and overhead workers 93 cents per day, which you all know is less than half that paid in this country. It then goes on to say that rollers in the Dortmund district are paid $3.05 per day, while we pay $7 to $13 per day; pipe welders, $2.50 per day, while we pay $5 to $7 per day; common labor, $1.08 per day, and we pay $1.70 to $2 per day. In the Aix le Chapelle district, they pay pipe welders $1.72 per day, and we pay $5 to $7 per day. They pay chargers $1.06 per day, and we pay $2.50 to $2.75 per day. They quote common labor as low at 48 cents per day, while our minimum is $1.70 per day.

"This report does not give the wages paid trades people, such as machinists, carpenters, bricklayers and electricians; but my information is that the more skilled the labor the less they pay in proportion to the wages paid here.

"This information with reference to labor, together with the fact that their cost of assembling their raw materials, due to these materials being close to the manufacturing plants, shows that they can produce finished pipe at much less than can be done in this country, and with their low ocean freight, especially to Pacific coast points, in comparison with our freight of $13 proves that we need approximately the present duty to enable us to compete. If even the Pacific coast business goes abroad it would be a serious blow to American capital invested in steel plants and railroads as well as to the workmen engaged in operating both."

Advocated Reduction of Duty on Tin Plate

Mr. Follansbee advocated a reduction of the duty on tin plate from 1.20 cents to a flat 1 cent rate. He said that the independent makers are agreeable to this reduction and that if the independents could stand it the Steel Corporation certainly could.

Senator Heyburn protested personally against any such reduction in behalf of those who might later desire to go into the industry. He felt that a reduction might work to the disadvantage of beginners. Moreover, it affected lead.

"I don't like to see any protectionist come in here and advocate a lowering of protective rates," said Senator Heyburn. "I think the duty should be left as it is."

"Well," said Mr. Follansbee, "let's leave it as it is. But I simply wanted to convince you that we want to be fair."

Senator Heyburn's statement was applauded, he getting the first applause of the entire session.

Makers of Seamless Tubes

Daniel J. Driscoll, of the Delaware Seamless Tube Co., Auburn, Pa., followed Mr. Campbell, representing the independent makers of seamless tube. He stated that the industry in this country is in an undeveloped state. Germany is the pioneer in the manufacture of seamless tubing and is enabled even under the present tariff to ship considerable of the product into this country. He said that the industry in its present state of development could not possibly survive if the duties are lowered. Owing to the difference in the American and German scales of wages there would be no possible chance for the American manufacturer.

W. H. Rowe's Statement

W. H. Rowe, of the Pittsburgh Steel Co., of Pittsburgh, spoke in behalf of the manufacturers of wire nails and fencing. He said that his company operated the largest wire plant in the world, producing 1,200 tons per day. This total represented the entire consumption of the United States when he originally started in business. He declared that the entire business of the Pittsburgh Steel Co. would be jeopardized by the passage of the bill as it practically puts its entire product on the free list.

Don't Disturb Standard of Living, Said Ker

S. P. Ker, Sharon Steel Hoop Co., Sharon, Pa., said that the only way the American manufacturer could meet the standard of the Underwood bill would be by a general lowering of wages and that any such attempt would result in an industrial revolution. He said that there had been built up in this country a certain standard of living that could not well be disturbed, and he urged that nothing be done to disturb it. Referring specifically to his business, he said that the price of cotton ties is now very low and that there is no possible excuse for putting them on the free list. About 52,000 tons are manufactured. He also said that the reduction of the duty on barrel hoops from $6 per ton to 15 per cent ad valorem would be fatal to the industry and that, moreover, it allowed fraud as the foreign manufacturer would underbill his goods. There isn't a mill in America that could manufacture at that price. He explained that the exports into Canada are very small. As a matter of fact the Canadian jobber can purchse hoops more resonably in England, but they are made in such great variety that the smaller jobber cannot afford to keep a stock of all on hand constantly, and, therefore, has to order from a market from which he can be served promptly. That is why there

is some export trade in hoops to Canada.

Samuel Van Saun Muzzy, Muzzy Bros., Paterson, N. J., appeared to request that the duty on wire heddles be reduced.

"Are you a manufacturer?" asked Senator Penrose.

"No, sir, I am an importer."

Fearing possibly that the committee might not know what heddles were, Mr. Muzzy brought quite a collection along, but Senator Smoot is "way up" on heddles. The ordinary mortal may not know what heddles are, but they are small wire contrivances of exceeding fineness and about 1 foot long. A thousand of them weigh only about a pound and they are used in the manufacture of silk fabrics. Mr. Muzzy's contention was that the duty upon them is too high, being 80 per cent, while the duty in the Underwood bill is too low.

"What duty do you suggest?" asked Senator Penrose.

"Forty per cent."

The American heddle industry is very small, only about 100 men being employed in it.

Southerner Pleads for Protection

President Rose, of the Atlanta Steel Co., addressed the committee as follows:

"In appearing before you I represent primarily the Atlanta Steel Co., of Atlanta, Ga., a corporation with approximately $2,000,000 invested in buildings and equipment, employing 750 men, with a daily payroll of $1,500, or approximately $500,000 a year, with gross sales amounting to about $1,500,000. In a general way, I am glad to speak for other manufacturers engaged in similar line of work. The so-called Underwood tariff bill puts on the free list articles which we and some other southern manufacturers produce, as follows: Wire, wire nails, barbed wire, field fencing, baled ties, barrel hoops and cotton ties. A glance at these will show that they are the small tonnage products of a steel mill where the number of workmen per ton of product produced is great and the payrolls form a large percentage of the gross sales. Our workmen are, therefore, most vitally interested in this measure as well as our stockholders. We have an investment at stake, but most of the buildings, especially those where the small products are made, could be used for the manufacture of some other finished article, but in the case of the workmen in the mills producing these light articles they will be unable to make as satisfactory a change. Operators of wire drawing blocks (wire drawers) seem not to be made—they grow, and when matured they know no other work and have no desire to learn another trade. They would, therefore, be unfitted for any other class of semi-skilled labor. It also takes years of practice and experience to develop skill and accuracy in the heating, rolling and bundling of hoops and cotton ties, and because of the time and skill required, these men have reached middle age, have been receiving high wages, and would be unfitted for other work. The effect, therefore, of forcing hundreds and thousands of these men to begin life anew would work a great hardship on our American labor.

Germany as a Competitor

"Germany is this country's greatest competitor in products where labor enters largely into the article produced. The manufacture of the light steel articles which it is proposed to put on the free list is no exception to this rule. Let us assume, for the sake of comparison (without stating as a fact, however) that we can produce in this country the heavy steel articles where expensive machinery takes the place of many men as cheaply as these heavy articles can be produced in Germany, freights not considered. A glance at the following will convince you, if it be necessary, that such an assumption could not be true of the lighter steel articles where labor cost is a large factor in the total cost.

"If you have seen a wire and nail mill in operation, you have a fair idea of how much of a workman's time it takes to draw a ton of wire and how much watchful care and time it takes for a nail machine operator to watch the making of a ton of this wire into nails. If you have seen a small rolling mill rolling light hoops and cotton ties, and noted the number of men it takes in the heating and rolling and bundling of this material and realize that the output in a nine-hour day is but from 30 to 50 tons, you can realize what a large item of cost the labor represents. You have been given information, with which you were probably all more or less familiar, regarding the wages paid in this country and the bureau of commerce and labor report states that in Germany rolling mill rollers receive from $1.60 to $2.24 per day, or an average of about $11 per week; whereas, in our mills, some of the rollers make this amount per day. The report also states that common labor receives from 78 cents to 97½ cents per day. Our common and semi-skilled labor in this country receives at least double these wages. It cannot be assumed that we can overcome this difference in labor cost by an increased production of these small steel articles. The foreign producer uses, in many cases, the same machines we use, running at the same speed, and, therefore, the difference in the cost of labor abroad and at home in the production of these small steel articles must be overcome by protection sufficient to equalize this difference in labor cost. Give us the same labor cost and satisfied workmen and we will produce even these small articles probably as cheaply as any other country. But cost of production, f. o. b. mill, is not all, even though it is enough against us. I am told that an ocean rate of approximately $2 per ton can be secured from the German mills to our Atlantic and Gulf ports. How much less rate could be secured on yearly contracts for large tonnages would no doubt develop, should this act become a law. Rates from American mills producing these articles for shipment to Atlantic and Gulf points range from about $2.80 to $6.70 per ton.

"These rates are the lowest rail and water combination rates and in order for the manufacturer to secure the advantage of them, he has to ship his product to the same ports where foreign goods would be delivered, and

Would Ruin the Business

(From testimony of Leonard Peckitt.)

"It seems to me unfair to propose a rate of duty that will open a gateway for foreign pig iron to such an extent as to close our industries and practically ruin a business representing millions of dollars of investment and employing large numbers of men. I, therefore, urge you to do what you can to have the present rate of duty on pig iron continue."

in turn reship them from these ports to the interior points—this means that the American manufacturer would not only be practically shut out from all port business but would have to surrender a large percentage of interior business to foreign manufacturers. It is true that some interior rates are at present figured on the all-rail rate, but the tendency of state railroad commissions is to reduce rates within their jurisdictions and, therefore, from year to year a larger section of our country will use port points as basing points for interior distribution and not only will our coast be surrendered, but a large part of our interior also. What will we gain, as a people, by all this? Possibly a short period of slightly lower prices, jobbers and retailers will have to carry larger stocks, as they will be unable to secure shipments promptly, or the farming community, in whose interest evidently this bill is proposed, will have to wait till the jobbers can secure foreign-made material. Nails and wire must be had at seasons of the year when the farmer can use them, but the exact time depends upon weather conditions. If, therefore, he should be unable to secure these, when he wants them, he would not have the time to use them at a later time. This is also especially true of the use of cotton ties and the history of the cotton-tie market the year following the passage of the Wilson bill with ties on the free list, and yet the price of foreign-made ties the highest ever known, is history not forgotten by the consuming trade.

"As a southern producer we appeal to you to give us the protection on which we based our calculations when starting our industry. Our southern mills especially need it at this time, as we are asking capital to join with us in the development of our resources. Some of our southern concerns, no doubt worthy, are having trouble at this time in properly financing their business, and this uncertain legislation is no doubt affecting eastern capital against seeking investments in southern steel enterprises."

Payne Bill Not Tested

The senate finance committee took up the more refined forms of manufacture Saturday, listening to the makers of cutlery and double barrelled shot guns. H. L. Henry, Geneva Cutlery Co., Geneva, N. Y., and William R. Turner, Torey Razor Co., Worcester, Mass., appeared on behalf of a variety of kindred interests. Their main point was that they could not compete with Germany, that, in fact, under the present bill, Germany exported a great deal of this class of manufacture and that it would be a hardship to reduce the tariff. Thomas Hunter, Hunter Arms Co., Fulton, N. Y., represented a number of manufacturers of double barrelled shot guns. Competition in this product is extremely keen and many have gone out of business. During the past few years, the selling price of the guns has been greatly reduced, but the cost of manufacture increased and it is a struggle now to compete with Belgian guns. He said that if the Underwood bill passed, 75 per cent of the manufacturers of double barrelled guns would go out of business.

W. W. Lukens, Alan Wood Iron & Steel Co., Conshohocken, Pa., appeared on behalf of his company, which is a maker of pig iron, ingots, blooms and light plates. He said that such unusual conditions prevailed in the international market and have prevailed since 1909 that the Payne bill has never been really tested; that is to say, there is a boom condition in England, and a depressed condition here, which has worked against any considerable business in imports. He begged that the law be given a fair trial before it is changed because American manufacturers do not really know whether the present tariff is enough, the American market not having been especially assailed under it.

Would Have Commission Fix Maximum Prices

Under Certain Conditions—Judge Gary Prepares Draft of Proposed Federal License Act for Corporations Exceeding Capital of Ten Millions

When Chairman Elbert H. Gary, of the United States Steel Corporation, appeared recently before the committee of the United States senate on interstate commerce, he expressed himself as favoring the regulation of large corporations through a governmental commission with plenary powers. Judge Gary was asked by the committee to submit a tentative bill embodying his ideas upon this subject and he has now prepared the document and has presented it for the attention of the committee. The measure has been designated by its author as a "Proposed Federal License Act", and is as follows: (The italics are ours.)

SECTION 1.—No corporation created under the laws of any state or territory of the United States or the District of Columbia or any foreign sovereignty, and having capital stock or assets of ten million dollars or more, shall engage in trade or commerce between the United States and foreign nations, or among the several states or between a state or states and places subject to the jurisdiction of the United States, or between any territories of the United States, or in and between such territory or territories, and any state or states and the District of Columbia or places under the jurisdiction of the United States, or between the District of Columbia and any state or states and foreign nations or places under the jurisdiction of the United States, until such corporation shall comply with the requirements of this act, and shall obtain the certificate of license hereinafter mentioned; provided, however, that the provisions of this act shall not apply to any common carrier mentioned in Section 1 of the act entitled, "An Act to Regulate Commerce", approved Feb. 4, 1887, as amended; and provided further, that corporations heretofore organized and engaged in such business shall have one year from the date of the passage of this act to comply therewith and to obtain a license. Any corporation which has a capital stock or assets of less than ten million dollars, which is engaged or intends to engage in interstate or foreign trade or commerce as aforesaid, may voluntarily comply with the provisions of this act by making application for a license. So long as it retains such license any such corporation shall be subject to all the provisions of this act.

Certificate of License

SECTION 2.—In order to comply with the requirements of this act and to obtain the certificate of license hereinafter mentioned, the corporation applying therefor shall make an application for such certificate of license, which application shall specifically set forth: (1st) the name of the corporation, which name shall be subject to the approval

of the Corporation Commission; (2nd) the state, territory or other sovereignty under the laws of which the corporation was created, with the date of its creation and the place in which the principal business office of the corporation is situated, designating the state, territory or district and county and city, town or village; (3rd) the objects for which the corporation was established, stating the general nature of the interstate or foreign trade or commerce which it intends to carry on; (4th) the amount of the authorized capital stock of the corporation, the amount of capital stock issued and outstanding, and whether or not any part of the capital stock was contributed in property other than money, and if so, the amount of such part; (5th) the number of shares into which the capital stock is divided and the par value of such shares; whether or not such shares are divided into classes, and if so, the amount of each class and a statement of the preferential and other special rights of each class; (6th) the number of directors and, if they are divided into two or more classes, the number of directors constituting each class and the terms of office of each class respectively, and the names and post office addresses of the directors and executive officers of the corporation at the time of the making of such application; (7th) the period limited for the duration of the corporation; (8th) any provision defining, limiting and regulating the powers of the corporation, its officers, directors or stockholders or of any class or classes of stockholders; (9th) the fact that the application is made to enable such corporation to avail itself of the advantages of this act; (10th) a copy of the certificate of incorporation or charter of the corporation. Said application shall also contain such other information as may be required by the Corporation Commission.

The application shall be signed in the name of said corporation by its president under authority of its board of directors and the corporate seal shall be affixed thereto and attested by its secretary, and the statements made therein shall be sworn to by the president and treasurer; and the application so executed and sworn to shall be transmitted to the Corporation Commission.

Issuing Certificates

SECTION 3.—It shall be the duty of the Corporation Commission to examine such application and to determine whether it conforms to the requirements of this act and contains any provision that is contrary to any other act of congress and whether the name proposed to be adopted by such corporation is the same as or so nearly resembles the name of any other corporation already licensed under this act as to be calculated to deceive; and if the organization and business of the said corporation do not involve any unlawful restraint of trade and commerce among the several states and territories and foreign nations, and do not constitute a monopoly or an attempt to monopolize, said trade and commerce, the said application shall be filed and recorded in a book to be kept for that purpose; and upon payment of the license fees hereinafter specified, said commission shall issue a copy of said application so filed, together with a certificate of the commission duly authenticated that the corporation has complied with all the provisions of law required to be complied with and has become and is authorized to engage in interstate, and foreign commerce as specified in its application. And from the date of such certificate the said corporation as such and in the name designated shall have the right to engage in interstate and foreign commerce, as aforesaid, unless said license is revoked as hereinafter provided for cause shown.

Important Provisions of Proposed Federal License Act

No corporation having a capital stock or assets of $10,000,000 or more shall engage in interstate commerce without obtaining license, but this does not apply to railroads. The companies now in business shall have one year to obtain license. Companies having a smaller capital stock may comply with the provisions of the act.

A corporation commission is created, to be composed of three members, to be appointed by the president; salary, $10,000 per year.

The corporation commission shall decide whether a corporation is entitled to receive license. If the commission decides in the negative, appeal may be taken to courts.

No licensed corporation whose business constitutes more than 50 per cent of the total business of the same character in the United States shall purchase property in the business of any other corporation or person engaged in similar competitive business without permission from the commission. Any licensed corporation entering into any contract or combination, or engaging in any conspiracy in restraint of trade, or engaging in any oppressive methods, may have its license forfeited or the corporation may be enjoined from the continuance of illegal acts.

The commission shall have authority to require any licensed corporation to desist from any violation of the Sherman anti-trust act of July 2, 1890, or of the proposed act. Any person, or company, or association, may enter complaint that any licensed corporation has entered into a contract in restraint of trade, or has monopolized or attempted to monopolize trade. It shall be the duty of the commission to inquire into the complaint and the commission shall have power to compel the corporation to desist from any illegal act, and may institute proceedings for the forfeiture of the license of the corporation.

Any licensed corporation may apply to the commission at any time for determination as to whether or not any proposed action is in restraint of trade. Any action taken by any corporation, pursuant to the order of the commission, shall be lawful, but, as to its future operation, subject to revocation. In connection with any order allowing such proposed action, the commission may fix the maximum prices of any products with reference to which the order is made.

Appeal to Courts

SECTION 4. — Should the Corporation Commission refuse to grant a license to any corporation under the terms of this act, said corporation may, upon such refusal, bring a suit against the said Corporation Commission before the Court of Commerce or any district court of the United States, which said courts are hereby given jurisdiction to review the action of said Corporation Commission, and if it shall appear to the court that said corporation has complied with all the terms and conditions of this act and that the name of said corporation is not the same as the name of any other corporation engaged in the same or similar business and already licensed under this act, or so nearly resembling the same as to be calculated to deceive, and if in the judgment of such court the organization and business of said corporation do not involve any unlawful restraint of trade and commerce among the several states, territories and foreign nations, and do not constitute a monopoly, or an attempt to monopolize said trade and commerce, and are not in violation of any other act of congress, the court shall make an order directing the said Corporation Commission to issue the said license pursuant to law. The said proceedings shall constitute an action in equity and be tried in the same manner as other actions in equity and an appeal shall lie from the judgment of said court to the supreme court of the United States, provided such appeal be taken within 30 days from the entry of the judgment. Upon any refusal to grant a license, if the corporation applying therefor shall thereafter and within 30 days institute a suit as aforesaid, the court shall have authority pending the litigation to enter an order permitting the said corporation to engage and continue in such commerce pending the final decision on such application.

SECTION 5.—If any corporation which has obtained and maintained a license under this act shall subsequently pursuant to the laws of the place of its incorporation, change its name or amend its certificate of incorporation, it shall immediately file with the Corporation Commission a certified copy of the amended certificate or other document evidencing such change. Thereupon the commission shall issue an amended license to conform to the change of name or amendment of the certificate of incorporation, provided the new name adopted by said corporation shall not be the same as the name of any other corporation engaged in the same or similar business and already licensed under this act, or so nearly resembling the same as in the opinion of the Corporation Commission to be calculated to deceive, and the amendment to the certificate of incorporation shall not contravene any of the provisions of this act.

Do No Banking

SECTION 6. — No corporation licensed pursuant to this act shall carry on the business of discounting bills, notes or other evidences of debt, or receiving deposits or buying or selling bills of exchange, nor shall it issue bills, notes or other evidences of debt for circulation as money.

Preliminary Requirements

SECTION 7. — As a condition of the issuance of any license under this act, the Corporation Commission shall require every corporation hereafter organized applying for liens hereunder to establish to the satisfaction of the commission the fact that no stock of the said corporation was issued except for cash or for property equal in value to the par value of the stock thus issued; and in determining the value of any property in payment for which stock has been issued, the Corporation Commission shall not be bound by the decision of the board of directors of the said corporation. To enable the Corporation Commission to ascertain the reasonable value of the said property, it shall cause the said corporation to file with the commission a statement in writing signed and sworn to by a majority of the members of the board of directors, setting forth: (*a*) a full description of the property in payment for which the stock was issued; (*b*) the number of shares issued in payment for said property and whether or not such shares have a par value, and if so, the aggregate par value of the stock so issued, or if not, then the number of shares so issued; (*c*) the names and addresses of the vendors of the property purchased or acquired by the corporation with the stock so issued, and whether or not they, or any of them, were officers or directors of the corporation, and whether or not they, or any of them, were, to the knowledge of the signers of the statement, owners in their own name or otherwise of any shares of stock in the corporation, and if so, of how many such shares; (*d*) the terms of any agreements, verbal or written for the transfer of such property to the corporation, and the parties to all such agreements, and particularly the amount paid as purchase money in cash or shares for such property, specifying any amount payable for good will, and any and all amounts paid to each vendor; and in case any written contract has been made with said vendors, or any of them, a sworn copy thereof shall be filed with such statement; (*e*) in case the vendors of such property, or any of it, are directors of the corporation or owners of any of its stock in their own names or otherwise, a statement of the prices paid by them for the property so sold or transferred to the corporation and copies of all contracts by which the said vendors acquired the ownership or the control thereof. In case the stock issued in payment for said property has a par value, there shall be filed with such statement with the Corporation Commission an appraisement of the value of said property made by two disinterested appraisers, approved in writing by the Corporation Commission; and the commission may in its discretion appoint one or more other appraisers to make valuations on such property, and shall fix the compensation of such appraisers, which shall be paid by the corporation before the issuance of any license; and no license shall be issued to any corporation whose stock having a par value shall have been issued in payment for property purchased or acquired by the corporation to an amount at such par value in excess of the value of the said property as approved by the Corporation Commission after such appraisement; *provided, however, that the requirements of this section shall not apply to any corporation organized prior to the passage of this act.*

Shall Not Buy Property

SECTION 8. — No corporation licensed hereunder and whose business constitutes according to the estimate of the commission more than 50 per cent of the total business of the same character in the United States shall purchase the property and business of any other corporation or person engaged in a similar competitive business in the United States, unless the said purchasing corporation shall first apply to the Corporation Commission, stating the nature of the business so to be purchased, the price to be paid therefor and such other facts as may be required by the commission. It shall thereupon be the duty of the Corporation Commission to inquire whether the said facts are true, and whether the purchase of said property would tend to create a monopoly in the purchasing corporation or to unduly restrain trade and commerce among the states and with foreign nations in violation of any law of congress; and if, in the opinion of the commission, such purchase would tend to create a monopoly in the purchasing corporation or to unduly restrain trade and commerce as aforesaid, then the commission shall refuse permission to purchase said property and business, and any purchase notwithstanding said refusal shall subject the said corporation to a forfeiture of its license as hereinafter provided.

Reports Required

SECTION 9.—Every corporation licensed pursuant to this act shall file in the Bureau of Corporations within 60 days after the first day of January or the first day of July in each year, or at such other times as the Corporation Commission may prescribe, a report on the condition of said corporation at the close of business on the preceding 31st day of December, or the 30th day of June, as the case may be, in such form and setting forth such details as the Corporation Commission shall from time to time prescribe, which report shall be verified by oath or affirmation of the president or treasurer of such corporation and attested by the signatures of at least three of the directors. The Corporation Commission shall also have power to call for special reports from any particular corporation whenever, in its judgment, the same shall be necessary in order to secure a full and complete knowledge of the condition of said corporation. In addition to such reports, every corporation organized under the act shall report to the Corporation Commission within 10 days after declaring any dividend the amount of such dividend and the class or classes of stock on which it is payable, and a copy of the statement of the financial condition of the corporation showing the amount of the net earnings of such corporation on hand at the time of declaring such dividends; which report shall be attested by the president, vice president or treasurer of such corporation.

Every corporation which shall fail to make and transmit any report required by this Section shall be subject to a penalty of $100 for each day after the period therein mentioned that it continues in default in the filing of such report, said penalty to be collected by the Corporation Commission; but the Corporation Commission may for good cause

shown extend the time for filing such reports without penalty for a period not exceeding 60 days. All sums of money collected for penalties under this Section shall be paid into the treasury of the United States.

Increase of Capital

SECTION 10.—Any corporation licensed hereunder which seeks to increase the amount of its capital stock shall first obtain the consent of the Corporation Commission to any such increase, and, as a condition of obtaining such consent, shall file with the Corporation Commission a statement in such form as may be prescribed by the commission, setting forth the circumstances of such intended increase; and if such increase is intended for the purpose of acquiring additional property, the said statement shall set forth the facts specified in the statements required by Section 9 hereof. Any increase of capital stock of a corporation licensed hereunder without the filing of the statements and the obtaining of the consent required under this Section shall subject the said corporation to a forfeiture of its license as hereinafter provided.

Revocation of License

SECTION 11.—In case any corporation licensed under this act shall enter into any contract or combination or engage in any conspiracy in restraint of trade and commerce among the several states, or with foreign nations, or shall monopolize or attempt to monopolize any part thereof, or shall engage in any oppressive methods of competition for the purpose of obtaining a monopoly of said interstate commerce contrary to the provisions of the act of July 2, 1890, entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies", its license may be forfeited, or the said corporation may be enjoined from the continuance of such acts, as hereafter more particularly provided.

Commission Created.

SECTION 12.—For the purpose of carrying out the provisions of this act, and for the proper supervision of such corporations as shall be licensed hereunder, there is hereby created a commission to be known as the Corporation Commission, which shall be composed of three commissioners. The said commissioners shall be appointed by the president by and with the advice and consent of the senate. Not more than two of said commissioners shall be appointed from the same political party. The first commissioners appointed shall hold office, one for two years, one for four years, and one for six years, and each commissioner thereafter appointed shall hold office for six years. No person in the employ of or holding any official relation to any corporation subject to the provisions of this act, or owning stock or bonds thereof, or who is in any manner pecuniarily interested therein, shall be eligible to hold such office. Such commissioners shall not engage in any other business, vocation or employment. No vacancy in the commission shall impair the right of the remaining commissioners to exercise all the powers of the commission.

The said commissioners shall each receive a salary of $10,000 per annum.

The said commission shall have the power and authority to inquire into the organization, conduct and management of the business of all corporations licensed under this act; and said commission shall have the right to obtain from such corporations full and complete information necessary in its judgment to enable the commission to perform the duties and carry out the objects for which it is created, and it is hereby authorized to execute and enforce the provisions of this act.

Power of Inquiry

SECTION 13. — The said commission shall have the same power of inquiry over commerce conferred upon the Bureau of Corporations under the act creating the Department of Commerce and Labor, approved Feb. 14, 1903, including the power to issue subpoenaes to compel the attendance of witnesses and the production of documentary evidence, and to administer oaths, and may avail itself of all the information obtained by said bureau and direct investigation to be made by said bureau when necessary to assist said commission. All the requirements, obligations, liabilities and immunities imposed by the act to regulate commerce and by the act in relation to testimony before the Interstate Commerce Commission, and by the act to create the Department of Commerce and Labor, shall apply to all persons who may be subpoenaed to testify as witnesses, or to produce documentary evidence in pursuance of the authority conferred by this act.

Investigating Complaints

SECTION 14.—Any person, firm, corporation, company or association, or any mercantile, agricultural, or manufacturing society, or other organization, or any body politic, or municipal organization complaining of anything done or omitted to be done by any corporation subject to the provisions of this act, or complaining that any such corporation has entered into any contract or combination, or engaged in any conspiracy in restraint of trade or commerce among the several states or with foreign nations, or has monopolized or attempted to monopolize any part thereof, or is engaged in oppressive or unfair methods of competition for the purpose of monopolizing such commerce or part thereof, contrary to the provisions of this act, or of the act of July 2, 1890, entitled "An Act to Protect Trade and Commerce Against Any Unlawful Restraints and Monopolies", may apply to said commission by petition which shall briefly state the facts, whereupon it shall be the duty of the said commission at such time and place as the commission shall determine, after notice to such corporation, to inquire into the subject matter of said complaint, and the commission is hereby authorized in like manner, upon its own motion, to institute and prosecute any investigation of the acts of such corporation. And said commission shall have the same powers, and authority to proceed with any inquiry on its own motion as though it had been appealed to on complaint or petition under any provisions of this act. Whenever any investigation shall be made by this commission under the terms of this act, it shall be its duty to make and file an order embodying the conclusions of the commission, together with its decision or requirement in the premises.

The said commission shall have authority by its order to require any corporation licensed hereunder to desist from any violation of this act or of the act of July 2, 1890, entitled, "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies", and may institute proceedings in any district court of the United States or in the court of commerce for the forfeiture of the license of said corporation, or to enjoin the corporation from such violation, and said courts are hereby given jurisdiction upon the institution of any such proceedings, either to grant an injunction, to decree the forfeiture of a license, or to make such other decree as justice and equity may require.

License Fees.

SECTION 15.—Under the provisions of this act there shall be paid to the Corporation Commission for the use of the United States the following fees: First, upon the filing and approval of any application for license hereunder an amount equal to one-tenth of one per cent of the total authorized capital of said corporation up to $10,000,000; one-twentieth of one per cent of all capital in excess of $10,000,000, and up to $20,000,000; $250 on every million dollars or fraction thereof of capital in excess of $20,000,000; and the like fees upon the filing of any certificate of increase

of the capital stock upon the total amount of such increase; second, in case any corporation is licensed hereunder with the whole or a part of its capital stock having no par value, then there shall be paid upon the filing and approval of the application for license or of any certificate or increase of capital a fee equal to 2½ cents for each aliquot part of the capital of the corporation represented by each of the shares not having a par value, but in no instance shall such fee be less than $250,000.

May Fix Prices.

SECTION 16.—*Any corporation licensed hereunder may apply to the commission at any time for a determination as to whether or not any proposed action of such licensee would unduly restrain trade or commerce or create a monopoly, and the commission shall thereupon investigate and make an order allowing or prohibiting such proposed action, and any action taken by any corporation pursuant to such order shall be lawful, but such order, as to its future operation, shall be subject to revocation upon notice. In connection with any order allowing such proposed action and as a condition of granting the same, the commission may fix the maximum prices of any products with reference to which the order is made, if in the judgment of the commission the fixing of such prices shall be necessary to prevent a monopoly or an undue restraint of trade or commerce; and the prices so fixed shall govern the said licensee so long as the order is in force.*

The Broken Rail Problem and Its Solution

A Brief Report of the Discussion of Rail Difficulties at the Joint Conference of Rail Makers and Railroad Representatives

That the investigation of the steel rail problem has already been undertaken by commissions in several states was developed at the joint meeting of the representatives of the railroads and steel manufacturers, held in New York, Feb. 15. While the statements made by railroad representatives were somewhat at variance as to the extent of rail breakages, it was generally admitted that in the northern states during the recent cold weather the number of broken rails was far in excess of the totals reported in previous winters. A brief report of this meeting was published in the last issue of THE IRON TRADE REVIEW, and the following detailed discussion has been taken from the proceedings which have just become available.

In opening the conference, Judge E. H. Gary, of the United States Steel Corporation, deplored the possibility of the appointment of some commission which would lay down formulas in accordance with which rails would have to be manufactured. Judge Gary spoke in part as follows:

"We are not here to insist upon an analysis upon the kind, character, structure or quality of rail; we are here to start in the direction of mutually arriving at results which we can defend whenever or wherever approached by anyone disposed to criticise. I believe unless we actively, persistently and effectively pursue this subject to a right solution, we shall find ourselves in the hands of a commission of some sort, like they have in England, a board of trade, a chamber of commerce, a state commission, or some other authority which shall lay down for us formulas under which and in accordance with which we shall be obliged to manufacture our rails. We may come to that anyhow. But I believe such a result is to be deplored from every standpoint, from the standpoint of safety as well as from the standpoint of economy and practicability.

Kind and Character of Rail

"I am inclined to think we must, in some way or another, ascertain what kind and character of rail is necessary to be adopted at this time. In the first place I do not think that the weight of the rail in use is heavy enough, that the weight of the rail has been increased in proportion to the weight of the equipment; and particularly in view of the great speed and more particularly during weather such as we have experienced during the last few months. With an engine counterbalanced for a certain rate of speed, running over rails such as have been more or less in use on some of the lines, and increasing that rate to meet the exigencies from time to time, we know it is almost impossible to construct a rail that will endure under such usage.

"It has seemed to me, if I may be allowed to say it, that the experts of the railroad companies and the manufacturing companies respectively, have not made as much progress as they ought to have made. I say that without any disposition to criticise, but from considerable experience in dealing with experts, which, I have no doubt is similar to the experience which the rest of you have had; it is not an easy matter to bring experts to the same opinion.

"I want to insist upon this one thing as a proposition which ought not to be denied. In view of the weight of the equipment in use at the present time, and in view of the great rate of speed, it is necessary for the railroad companies, if they are desirous of doing their whole duty to their patrons, and therefore to the public, to put and keep the roadbeds in the very best possible condition, and it is necessary for the manufacturers of rails to make the best rail which is practicable. I think we cannot escape these conclusions. We want to meet you on that basis. We are alarmed at the growing sentiment against rails, notwithstanding, as I say, criticisms have often been unjust and the claims made very much exaggerated."

Howard Elliott, president of the Northern Pacific Railroad Co., stated that there were rail breakages on the Northern Pacific system, particularly in cold weather territory, from the middle of December until the middle of January. "The excessive cold weather," he added, "occurred in the tier of states mostly east of the Rocky mountains." The company's records show that in the last few years the kind of rail that has been purchased has broken to a very small extent west of the Rocky mountains, but east of the Rocky mountains more trouble has been experienced from broken rails than on the western end of the system. The principal breakages have been in the 85-pound sections on the main line, except where the track has been replaced in the last two years with a 90-pound section. Referring to the recent cold weather, he stated that it resulted in an unusual number of breakages and suggested that the causes should be investigated. In December, 1910, there were 33, 90-pound rails broken in the

so-called cold weather district of the Northern Pacific; in December, 1911, 57. In December, 1910, the total of 85-pound broken rails was 316, and in 1911, 523. In both instances the number of 85-pound rails broken was in excess of the proportion that should have broken, compared with the breakage of the 90-pound rail. During the first 16 days of January there were 106 breakages in 90-pound rails in 1911 and 177 in 1912. On the other hand, 1,091 85-pound rails were broken during the first 16 days of January this year, compared with 486 in January a year ago.

Fractures

Referring to the fractures, Mr. Elliott said that the breaks on some of the rails examined seemed to start from a fine line on the rail along the surface of the flange which would extend a certain distance and would then turn at right angles. For the cold weather country the American Railway Association type B rail was adopted, as it was found that the bulk of the breakages were in the flange, which consisted of shell-like breaks, but since the thicker section was adopted this type of breakage largely has been eliminated. Mr. Elliott doubted whether the increase in the weight of the section to 100 or even 125 pounds would prevent rail breakage during periods of extremely low temperatures. He added that in adopting a specification to be used generally, climate, speed and road conditions would have to be taken into consideration. Mr. Elliott further called attention to a meeting recently held by the railroad commission of North Dakota for the purpose of discussing the rail problem. The railroad commission made no suggestions but merely endeavored to investigate the facts.

H. Walters, chairman of the Atlantic Coast Line Railroad Co. and Louisville & Nashville railroad, said that since the adoption of the open-hearth rail four years ago, little difficulty has been experienced from broken rails.

John D. Isaacs, consulting engineer of the Union Pacific, said that under identical specifications, weights and sections, some mills deliver entirely satisfactory rails, while others do so part of the time, but do not deliver equally satisfactory product at all times, forcing the belief that they vary their manufacturing processes. On the subject of high carbon, Mr. Isaacs spoke as follows:

"Some confusion seems to exist to the effect that hardness and brittleness are identical. This is not really the case. In our experience with rails, our records indicate quite strongly that we are getting improved results as we raise the carbon, which we have been doing tentatively and gradually for several years, as safety and desirability have indicated. While the improvement that we have obtained in our rails may not be entirely due to increase in carbon, it would certainly appear that such increase has had no deleterious effect as regards breakage and failures. It is true that it is harder to weld high carbon steel than low carbon steel, in other words if there are initial pipes in the metal from which the rail is rolled they are less likely to be welded-up in subsequent processes where the carbon is high than where it is low, but there is no certainty that they will be welded-up in any case. By far the greater portion of our failures are from defective heads, pipes, flaws, etc., and with the soft metal these are as apt to cause an accident as with a hard. We are not now inclined to advocate very high carbon and we certainly object to very low carbon, believing one will be as prolific of rail failures as the other, as there is a certain mean at which the metal can stand most punishment. At any rate, in rails of 90-pound weight, the average of carbon used by all of the principal railroads of the United States is below that used by the Harriman lines, while the average of breaks per 100 miles of all of the principal railroads in the United States for the same weight of rail is a little more than five times the average of the Harriman lines.

Poor Track and Defective Equipment

"Considerable has been said of breakage of rails caused by poor track and defective equipment. This, no doubt, often occurs, but the fact remains that the large proportion of our rail failures, no matter for what cause, show interior defects in the fracture. It is said that we do not strengthen our bridges by the use of higher and harder structural steel. Of late nickel and special alloys are coming into use for just this purpose. It must be borne in mind that the carbon is not put in the rail merely to resist direct stresses, although it does so, but we must get a certain amount of wear under the rail, and as already mentioned, there is a limiting point at which softness becomes a serious detriment. As regards the discard, our specifications now require 9 per cent, which appears to be about the usual amount allowed by the mills themselves. We at first practically increased this to 29 per cent by segregating the top rails from the ingots, namely, the A-rails, using them for light branch line service and sidings. As usual, under operating conditions, however, it was found necessary to run pretty much the same equipment over these so-called light branch line tracks as over our main lines, and to our surprise we found the A-rails to show up better than the average lower down in the ingot. We, therefore, discontinued the segregation of the A-rails for light service. The consequence of this has been that we have had more failures in our main line heavy traffic of the rails made from below the top of the ingot than the A-rails, even as regards flaws and piping; in other words, our evidence seems to show that our discard might, with advantage, have been taken from further down in the ingot instead of the top; granted, of course, that the original 9 per cent is first taken off. From this we conclude that a 29 per cent discard would not insure sound metal in ingots as now made.

Discards

"In addition to the above considerations, we did not feel that we had been liberally treated as regards discards in sections from the 9 per cent mill. We estimate that if we had received a total of 25 per cent discard, the discarded metal would have cost us $26.40 per ton, in other words, we would have paid very nearly the full value of the discard rail without receiving any apparent equivalent therefor, so it was considered best by us to pay the full $28 and take this discard as rail, even if we had to use it for secondary purposes.

"With the exception of the last two years, during which the manufacture of rails has been much improved, the heavier rail did not prove superior to sections of the lighter weight; the heavier rails of the same manufacture have not so far justified our hopes that their use would be attended with a corresponding reduction of rail failures, and there is no assurance or reason for assurance that we can see, that with the increase of weight we can give increased security and under the same traffic today the failures of the 90-pound A. S. C. E. sections considerably exceed those of the 75-pound section."

William H. Truesdale, president of the Delaware, Lackawanna & Western railroad, directed attention to the life of 75 and 80-pound rails as compared with the heavier sections generally used today. He stated that the lighter rail sections have been in

use upwards of 15 years and are still in the track, whereas rails of heavier sections have worn out in one-half that time. "If our company could get a rail such as was made in the 90's," added Mr. Truesdale, "there would be no criticism of the rail that would be furnished us, provided we could get it of that kind. The open-hearth rail we have been using during the last two or three years has been giving us satisfactory results. We are not getting the use we would like to on the crooked portions of our road even from the open-hearth rail that we are buying, but with the inspection that we are giving the rail and with a carbon content I think higher than most of the companies use, we have comparatively little complaint from breakages and we are certainly getting a good deal better rail than we did when we took up this question about three or four years ago."

W. C. Brown, president of the New York Central lines, said that the rail problem had been given a thorough and exhaustive study by his road during the past 10 years and several years ago the conclusion was reached that Bessemer rails were unsuited for the traffic and the conditions under which they had to be used. For two or three years rails alloyed with ferro-titanium have given satisfactory results and last year more than 100,000 tons of open-hearth rails were purchased.

Ductility Tests

P. H. Dudley, consulting engineer of the New York Central Lines, outlined the following interesting results that had been obtained by the application of ductility tests.

"Our specifications require three tests from each melt of steel, one from the first ingot, another from the middle ingot, and the third from the last ingot poured. The specifications require that two of the tests shall show an elongation of at least 5 per cent in two consecutive ingots, while in the third the ductility of the steel is exhausted. By ductility I mean elasticity. This is the first opportunity that the manufacturers have ever had of knowing the ductility of every melt of steel. This information is obtained by the drop test. We stamp the base of a rail with a spacing bar which has seven points, making 6 inches accurately divided. The rail is then placed in the drop testing machine which produces a permanent set. This elongation is then measured to obtain the elongation in the center part of the rail. In the third test the ductility is completely exhausted, which shows practically the elongation of the metal the same as though it were tested in a testing machine. This information is quickly obtained and if the ductility is less than it should be, the melter is promptly advised and corrections are made to obtain the proper ductility required."

Percentages of Discard

Daniel Willard, president of the Baltimore & Ohio Railroad, said that while it is true no doubt that the railroads have failed to agree concerning the troubles causing rail breakages, it seems clear that the manufacturers have also failed to agree in certain very essential points. He cited the difference of opinion that seems to prevail concerning the percentage of discard, having been told by some manufacturers that the present general practice of 9 per cent discard removed the most faulty steel. Mr. Willard said that he had also been told, however, that if 20 per cent discard would be permitted, probably as much as 90 per cent of all the failures that could be attributed to piping or segregation could be eliminated. He said that he had also been informed that to remove all danger of breakage 20, 30 or even 50 per cent of the ingot would have to be discarded. Continuing Mr. Willard spoke as follows:

"When purchasing our rails this year I was informed by the steel manufacturers that the general practice now was to discard, we will say, about 9 per cent; that undoubtedly there was a condition below that resulting from segregation which might result in piping and imperfection of the rails, but that if we would discard as much as 20 per cent we would probably do away with 90 per cent of the failures. I was then confronted with this proposition: Ought I, as a railroad president, having that knowledge, recommend or authorize the purchase of rails with a discard of 9 per cent when with the best information obtainable I was advised that if we took out 11 per cent more in discard 90 per cent of the failures would be eliminated? I really felt that it was my duty to pay as much as necessary to get that greater element of safety. I thought that was a duty I owed the public, but at the same time I did not feel the confidence that I would like to feel that that was the best thing to do. I felt that we have to get the best rail possible, and if we have to pay more for it, we will have to pay it."

A. W. Gibbs, chief mechanical engineer of the Pennsylvania railroad, said that the officials of the railroad system which he represented have been very much concerned over the recent action of the Interstate Commerce Commission in taking an arbitrary stand in regard to rails. Investigations recently made indicate that rails rolled on recent specifications have not been breaking to anything like the same extent as the old rails.

"What we are afraid of," added Mr. Gibbs, "is that either some congressional committee or some state committee or the interstate commerce commission will take an arbitrary view and demand softer and heavier rails. Looking back about 20 years, when we changed our eastern lines from 85 to 100-pound sections, I recollect very clearly the great disappointment in regard to our heavier rails."

H. B. Spencer, vice president of the Southern Railway Co., said that it was the experience of the company which he represented that in the last few years the quality of rails has been improving

Local Problem

President C. S. Price, of the Cambria Steel Co., spoke as follows:

"We want to make the safest rail possible, but we must look to the railroads to tell us what they want. In other words, the data must come from them. For that reason the problem is largely a local one. Every road has its own problems to solve. Every line has its various equipment, its roadbeds are different, its climates are different, and while it would be very easy for us to solve our problems if we could adopt one specification and work to it, it is absolutely impossible to do so and we may as well face that issue in the beginning. The committee should be patient until the problem can be solved intelligently. There is no use of any of us being stampeded by this era of investigations and commissions."

Robert Job, chief chemist of the Lehigh Valley railroad, in discussing discard said that a great deal depends upon the methods of the manufacturer. Under some conditions as low as 9 per cent discard will give satisfactory results, while under other conditions 20 per cent discard will not eliminate the piping and the different defects that occur. For this reason he was of the opinion that it would be impossible to give a certain percentage of discard that would insure absolutely good results from all classes of service.

Iron and Steel Securities

A few securities showed activity on the New York stock exchange last week but the list generally was exceptionally dull and net price changes were narrow. The features were the strength of copper stocks, which responded to the advance in the price of the metal, and the sharp decline in several steel securities under light selling. More gold was shipped to South America.

Monday, trading was the dullest in months, but prices averaged slightly higher at the close; foreign markets were dull. Tuesday's volume of trading was the smallest in eight months, the feature being the strength of railroad issues in contrast to industrials; foreign markets again dull. Wednesday, nearly one-half of the trading was in Reading securities, which closed at a loss; iron and steel issues not very firm; grain and cotton markets somewhat firmer; foreign markets firmer on prospects that a conference with British government officials would avert a general strike of English coal miners. Thursday, the markets were closed because of Washington's birthday; foreign markets quiet and fractionally lower. Friday, trading was dull and irregular, Republic Iron & Steel securities declining to the lowest in more than a year. Saturday, the market was again dull, the feature being the liquidation in Republic Iron & Steel issues; the general list, however, recovered from early weakness and closed steady.

	Clos'g Quo. Feb. 24	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend—Last Dividend	Date Last Div. Pay
Allis-Chalmers	1	+ ⅛		$19,820,000		.....	
Allis-Chalmers, pr	6½	.....		16,050,000	7 cum.	1¾ Q.	Feb. 1904
American Can	11⅝	.....	Feb. 6	41,233,300		.....	
American Can, pr	92⅛	+ ⅛		41,233,300	7 cum.	1¼ Q.	Apr., 1912
Am. Car & Fdy	50¾	— ¼	June 27	30,000,000	2	½ Q.	Jan., 1912
Am. Car & Fdy., pr	115	.....		30,000,000	7 n. c.	1¾ Q.	Jan., 1912
American Loc	32½	+ ⅜	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	104	— ¼		25,000,000	7 cum.	1¾ Q.	Jan., 1912
American Ship	50	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	102¼	+ ⅜		7,900,000	7 n. c.	1¾ Q.	Jan., 1912
Am. Steel Foundries	28	— ½	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	15	+ 5	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	85	+ 5		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	30	— ⅛	April 2	14,862,000		.....	
Bethlehem Steel, pr	58⅞	+ ⅞		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	42½	— ¼	Mar. 19	45,000,000*	5	1¼ Q.	Feb., 1912
Cambria Iron	45	.....		8,468,000*	4	2 S. A.	Oct., 1911
Chicago Pneumatic Tool	46	— ¼	Feb. 19	6,448,800	4	1 Q.	Jan., 1912
Colorado Fuel	24⅜	— ⅜	Oct. 21	34,235,500		1¼ Q.	April, 1902
Crucible Steel	10½	— ⅛	Nov. 15	24,578,400		.....	
Crucible Steel, pr	80½	— ½		25,000,000	7 cum.	1¾ Q.	Dec., 1911
Empire Steel	10	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr	36	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	Feb., 1912
General Electric	160	+2¼	May 14	77,281,200	8	2 Q.	Jan., 1912
Harbison-Walker	40	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr	100	.....		9,600,000	6 cum.	1½ Q.	Jan., 1912
International Pump	28	—2	Dec. 13	17,762,500		½ Q.	Apr., 1905
International Pump, pr	80	+ ⅛		11,350,000	6 cum.	1½ Q.	Feb., 1912
Lackawanna Steel	30	.....	Mar. 13	34,978,000		.....	
Lake Sup. Corp	29½	+1⅛	Oct. 2	40,000,000		.....	
New York Air Brake	53⅛	+3½	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,000	6	1½ Q.	Mar., 1912
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Feb., 1912
Otis Elevator Co	73	+3	Mar. 18	6,358,600	4	1 Q.	Jan., 1912
Otis Elevator Co., pr	100½	.....		6,375,300	6 n. c.	1½ Q.	Jan., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr	100	— ⅛		20,587,500	7 n. c.	3½ S. A.	Nov., 1911
Pittsburgh Coal	17	.....	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr	79	.....	Oct. 7	27,071,800	7 cum.	1¾ Q.	Jan., 1912
Pittsburgh Steel Co., pr	101½	.....	Feb. 21	7,000,000	7 cum.	1¾ Q.	Mar., 1912
Pressed Steel Car	30	—1		12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	98	—2½	Nov. 13	12,500,000	7 n. c.	1¾ Q.	Feb., 1912
Pullman	159	.....	Mar. 7	120,000,000	8	2 Q.	Feb., 1912
Railway Stl. Spring	27½	.....		13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	103	+ ½	Oct. 16	13,500,000	7 cum.	1¾ Q.	Mar., 1912
Rep. Iron & Steel	16½	—3⅛		27,191,000		.....	
Rep. Iron & Steel, pr	68¼	—6	Mar. 13	25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	40	.....		10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....	June 26	6,700,000	7 n. c.	1¾ Q.	Jan., 1912
U. S. Pipe & Fdy. Co	14¼	+1¼		12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr	51	+ ⅞	April 15	12,500,000		1¼ Q.	June, 1911
U. S. Steel	60	+ ⅛		508,302,500	5	1¼ Q.	Mar., 1912
U. S. Steel, pr	108⅜	.....		360,281,100	7 cum.	1¾ Q.	Feb., 1912
U. S. Steel 5s	102⅞	— ⅛	Sept. 17	465,189,500	5	.....	
Va. Iron, Coal & Coke	58	—2	Oct. 1	9,073,680		5. †	Oct., 1907
Westinghouse Air Brake	158	.....	June 12	14,000,000*		5 Q.‡	Jan., 1912
Westinghouse Electric	73	+2½		3,998,700*	7 cum.	1¾ Q.	Jan., 1912

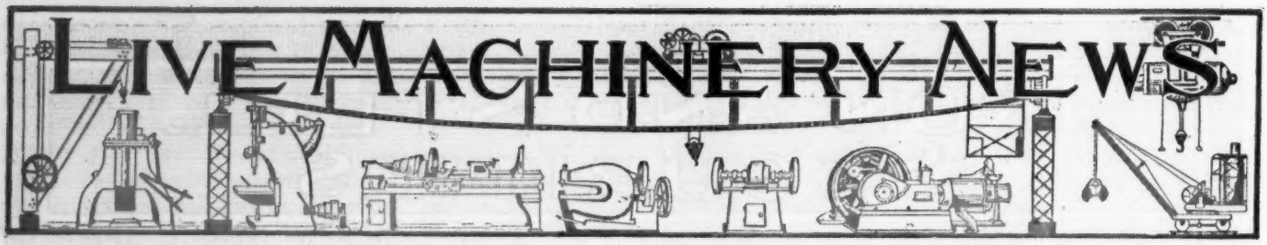
Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2¾ regular, 1½ extra and 1 special.

Money on call ranged between 2½ and 2 per cent. Time money, in spite of the light demand, was held more firmly. The actual condition of clearing house institutions showed loans increased $2,688,000; net deposits decreased $827,000; total reserve, $460,108,000, and the excess of reserve, $28,199,200, a decrease of $8,003,750. Non-member banks and trust companies showed loans decreased $748,600; net deposits increased $3,595,600; reserve on deposit increased $385,300, and the percentage of reserve 19.6, unchanged from the week previous. Fortnightly railroad statistics showed a decline in the idle car surplus of 18,623, leaving the surplus smaller than at any time since October, 1910. Bank clearings showed a decline of 1 per cent from the preceding week, but an increase of 1.5 per cent over the corresponding week a year ago. Commercial failures numbered 290, compared with 334 the preceding week and 263 the corresponding week last year. Shares were sold to the number of 983,320, compared with 1,386,600 the preceding week and 2,178,900 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $8,406,000, compared with $10,700,000 the preceding week and $13,386,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 66½, a net gain of 1¼.

Boston.—Butte Coalition closed 23, a net gain of ¼; Calumet & Arizona closed 61, a net gain of 1; Calumet & Hecla closed 440, a net gain of 15; North Butte Mining closed 26½, a net gain of ¾; Quincy Mining closed 77, a net gain of 1.



In New York, buying of machinery is only fair in volume and there is a very noticeable disposition to hesitate in closing. This is believed to be accentuated by the tariff discussion at Washington and it is not improbable that some of the important prospective business figured on by New York dealers will be delayed indefinitely as a result. The trade in out-door and contractor's machinery in New York has been brought to a standstill by the severe weather. A number of inquiries for small power plant installations are before New York dealers and early action is expected on these. In Cleveland, several contracts have been closed for the erection of new manufacturing buildings and plans are developing rapidly in connection with several others. Plans for several power development projects are under way in Cleveland, and these are expected to mature within a month or two. In Pittsburgh, less optimism prevails in machinery circles than a month ago, since little has been done to revive interest in projects on which action was to have been taken at about this time. Westinghouse, Church, Kerr & Co., Pittsburgh, have taken a contract from the Canadian Pacific railroad for the construction of the latter's extensive shops at Fort William, Ont.

Power Plant Equipment

The Rochester Last Works, Rochester, N. Y., will erect an addition to be used as a power house. The installation will cost about $10,000.

The Struthers-Wells Co., Warren, Pa., will build a brick and steel addition to its boiler shops this spring, to cost about $70,000.

Brewer & Gore, Memphis, Tenn., who recently acquired the lighting and water plants of Imboden, Ark., are in the market for boilers and other equipment to be installed there.

The Louisville Cereal Mill Co., Louisville, Ky., which is erecting an addition to its grain elevator, will be in the market for power and conveying equipment.

The W. H. Rosecrans Engineering Co., 30 La Salle street, Chicago, will take bids about March 15, for a 10,000-horsepower hydro-electric plant to be built on the Payette river, Boise, Ida., for C. L. Talmadge, 37 Wall street, New York.

At a recent meeting of the stockholders of the Massachusetts Lighting Co., Boston, a proposal to spend $300,000 for extension and enlargement was endorsed. The improvements will be favored by an increase in the capital stock.

The Alabama Coal & Coke Co., Birmingham, Ala., has taken over the Drury coal mining property at Waverly, Ky., and will install new boilers, pumps and coal-cutting machinery, enlarge the tipple, etc. R. M. Auxford is general manager of the company.

The Kentucky Public Service Co., Louisville, which recently was formed to take over properties in four interior towns, has begun to buy machinery with which to improve the plants. Equipment for Bowling Green has been contracted for, and other machinery will be bought later on.

The Ullman & Philpott Mfg. Co., Cleveland, which is having plans prepared for a new plant, will require a quantity of special machinery for mixing paints and varnishes. It is also considering the installation of two 30-horsepower motors. Wilbur J. Watson, Cleveland, prepared the plans and specifications.

The Osborn Engineering Co., Cleveland, is about to commence work on plans for a new plant for the Miller Rubber Co., Akron, O. A considerable quantity of machinery will be required and bids for this will be taken by the Osborn company in a month or more. The Miller Rubber Co. is preparing its own plans for the power plant, which will include two steam-engine driven units of 1,000 kilowatts. The Osborn company is also preparing plans for another rubber plant in Akron.

Machine Tools

L. R. Veatch, First and A streets, Louisville, is in the market for a small power drill, a used machine preferred. A second-hand bandsaw is also required.

The Enterprise Foundry & Machine Co., Bristol, Va.-Tenn., is making some improvements at its plant and will install additional machinery. A car-wheel borer and a bulldozer are among the items needed. Used machinery is desired.

The Elkton Machine Works, Elkton, Ky., which was recently incorporated with $6,000 capital stock, has taken over the machine shop of N. P. Blankenship, and will add new machinery. Mr. Blankenship will be manager of the company.

Bids have gone in on the large list of machine tools put out by Rochhill & Victor, 114 John street, New York, commission merchants. The business was referred to in THE IRON TRADE REVIEW of Feb. 15, as representing the requirements of a Japanese railroad shop. The list specifies 86 tools, approximating $100,000 in value.

Plans are being prepared for a new machine shop and storage room for the Standard Plate Glass Co.'s plant at Butler, Pa. The former machine shop was destroyed by fire in January. The company announces that in replacing this department, it will be considerably enlarged and improved in equipment. J. W. Cruickshank, Pittsburgh, is engineer in charge.

New Construction

The Industrial Works, Bay City, Mich., is reported to be about to draw plans for a machine shop, 150 x 525 feet; a storage building, 60 x 300 feet, and a car shop, 150 x 300 feet.

C. E. Johnson, Thayer building, Kansas City, Mo., engineer of the Kansas City Southern railroad, is preparing plans for the construction of a round-house, machine shops and other buildings at Watts, Okla.

The Otto Gas Engine Works, Philadelphia, is having plans prepared for a new manufacturing plant, one-story, to cost approximately $100,000. Ballinger & Perrot, 1211 Arch street, Philadelphia, are the engineers.

The H. K. Porter Locomotive Co.,

Pittsburgh, will build an addition to its machine shop, three stories, 100 x 158 feet. Bids are being taken both for general and separate contracts.

The Davis Milk Machinery Co., 216 North Clinton street, Chicago, is about to lease a new manufacturing building erected by the Northern Illinois Industrial Co. at North Chicago, Ill.

The Ohio Machine & Boiler Co., Cleveland, is erecting a one-story boiler house, 30 x 38 feet. The present power plant will be transferred to the new building and no new equipment will be purchased.

Baltimore & Ohio railroad officials state that work will be started this spring on the construction of new shops at Cumberland, Md. Plans are being drawn for buildings and equipment that will cost between $300,000 and $400,000.

Plans have been filed with the city building department of Newark, N. J., for the construction of a steel factory building at 394 Frelinghuysen avenue. The Goeller Iron Works will own and occupy the building, which, it is estimated, will cost $15,000.

The American Sheet & Tin Plate Co. has broken ground for additions to its Monessen plant, Monessen, Pa., which will provide for new machine shops, power house, and improved crane service. Steam power is to be abandoned for electric under the new plan.

The Strong Mfg. Co., Bellaire, O., manufacturer of enamled ware, advises that it is erecting a new plant, 320 feet square, at Sebring, O. It will dismantle its present plant when the new one is finished and move its machinery. Very little, if any, new machinery will be required.

H. O. Davidson, architect, Caxton building, Cleveland, has let a contract for the construction of a two-story machine shop and office building, 45 x 70 feet, for the B. & B. Mfg. Co., 6207 Cedar avenue. The structure will be used for the manufacture of automobile wind-shields.

John L. Mullen, contractor, Pittsburgh, has been awarded a contract for the erection of steel work for the Frick & Lindsay Co.'s warehouse building, Northside, Pittsburgh. The building is to be a seven-story structure, 55 x 105 feet, requiring 700 tons of steel, and will be used to store mine and mill supplies.

The Taunton-New Bedford Copper Co., New Bedford, Mass., has let the contract for the construction of new rolling mill and power house buildings to the H. B. Converse Co., 88 Broad street, Boston. The plans provide for a main building, 120 x 353 feet, of brick and fireproof construction, and a boiler-house, 30 x 43 feet.

The Canton Mfg. Co., Canton, O., has placed contracts for extensions to its buildings, which will double the capacity of the plant. Improvements include an extension of the main building, a power plant, and the installation of presses and woodworking machinery. The company manufactures steel ventilators, skylights, etc.

At the annual meeting of the recently organized Mauston Aluminum Co., Mauston, Wis., it was announced that all machinery and equipment needed at present had been purchased. Schedules are being prepared, however, for some heavy equipment to be installed as soon as the entire buildings of the former Mauston Boat Co. have been remodeled.

The North Buffalo Hardware Foundry, Buffalo, has under construction a foundry, 66 x 230 feet, which will have a capacity for turning out 10 to 15 tons of light gray iron castings daily. Jobbing work will be done mainly and some specialties will be manufactured. The officers of the company are: President, W. A. Griffin; vice president, E. B. McKenna; treasurer, B. H. Prentice; secretary, L. F. Gilbert.

The Diamond Forging & Mfg. Co., whose plant, Northside, Pittsburgh, was burned Feb. 21, announces that a new site will be secured in the Pittsburgh district. New equipment is to be purchased, and it is hoped to commence operating again within a week or 10 days. The old plant was totally destroyed with the exception of warehouse. The company states it will be able to continue shipping from its warehouse and will accept orders for special forgings and patent whiffle trees, its specialty.

Westinghouse, Church, Kerr & Co., Pittsburgh, Pa., have taken a contract for the general construction of the proposed Canadian Pacific railway shops at Calgary, Alberta, at a cost of $2,750,000. The construction work includes locomotive, machine, boiler, blacksmith, pattern, coach, freight car repair and paint shops, and foundry, planing mill, power house, dry kiln, scrap docks, material bins, and office buildings, together with the equipment. The buildings will be of reinforced concrete, steel, brick, and hollow ware. The work will be started early in the spring.

Contracts for a new plant for the Perfection Spring Co., Cleveland, have been awarded by Morrow & Cross, Garfield building, that city. The plant will comprise three buildings, containing 100,000 square feet of floor space and will be devoted exclusively to the manufacture of automobile springs. It will be located on Central avenue between Sixty-fifth and Sixty-seventh streets, Cleveland. The plant will be equipped with special spring machinery which will be built on contract from the company's own plans. The latter contracts have not yet been awarded.

Government News

Bids were opened by the bureau of supplies and accounts, navy department, Feb. 20, for furnishing materials and supplies to be delivered at various naval stations, in accordance with the schedules and classes enumerated, as follows:

Schedule 4298, class 21, one standard 34-foot platform car, 60,000 pounds capacity; and 4 standard-gage, 4-wheel push cars; to be delivered at Portsmouth, N. H.: F. S. Banks & Co., New York, $760.50; Fairbanks, Morse & Co., New York, $90.60 pt.; Universal Supply Co., New York, $787.50 pt.; Ernst Wiener & Co., New York, $644.60.

Schedule 4299, class 31, motor-driven boring machine; to be delivered at Hingham, Mass.: Fairbanks & Co., Washington, $387; J. A. Fay & Egan Co., Cincinnati, $257.98.

Class 32, do., one motor-driven combined band and circular saw filing and setting machine: Fairbanks & Co., Washington, $137; General Machinery & Supply Co., New York, $150; Manning, Maxwell & Moore, New York, $126.

Class 33, do., one motor-driven variety wood-worker: Fairbanks Co., Washington, $397; J. A. Fay & Egan Co., Cincinnati, $630.34; Kemp Machinery Co., Baltimore, $244; Manning, Maxwell & Moore, New York, $271.

Class 34, do., one motor-driven surfacer: Fairbanks Co., Washington, $397; J. A. Fay & Egan Co., Cincinnati, $630.34; Montgomery & Co., New York, $481.20; Oliver Machinery Co., New York, $460 and $658; H. B. Smith Machine Co., Smithville, N. J., $541; J. T. Towsley Mfg. Co., Cincinnati, $700 and $745.

Class 35, do., one motor-driven pattern makers' lathe: Fairbanks Co., Washington, $447; Oliver Machinery Co., New York, $460; Prentiss Tool & Supply Co., New York, $331.75 and $334.75.

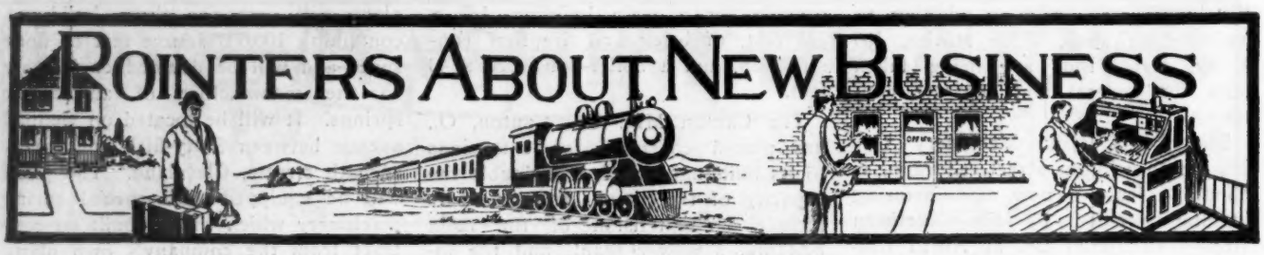
Class 36, do., one motor-driven band saw, 36 inches: Fairbanks Co., Washington, $407; J. A. Fay & Egan Co., Cincinnati, $451.23 and $309.26; Manning, Maxwell & Moore, New York, $370.40; Oliver Machinery Co., $270; Prentiss Tool & Supply Co., New York, $232; H. B. Smith Machine Co., Smithville, N. J., $275; J. T. Towsley Mfg. Co., Cincinnati, $400 and $470.

Class 37, do., one motor-driven jointer, 16-inch: Fairbanks Co., Washington, $270; J. A. Fay & Egan Co., Cincinnati, $256.55; Manning, Maxwell & Moore, New York, $350; Oliver Machinery Co., New York, $290; Prentiss Tool & Supply Co., New York, $441; H. B. Smith Machinery Co., Smithville, N. J., $300; J. T. Towsley Mfg. Co., Cincinnati, $300, $330 and $415.

Class 38, do., one motor-driven universal saw table: Fairbanks Co., Washington, $297; J. A. Fay & Egan Co., Cincinnati, $444.23 and $334.23; Manning, Maxwell & Moore, New York, $345.10; Oliver Machinery Co., New York, $395; Prentiss Tool & Supply Co., New York, $470 and $491.

Schedule 4300, class 41, Philadelphia, one bench jointer, 6-inch, on iron floor stand, motor-driven: J. A. Fay & Egan Co., Cincinnati, $192.37; Manning, Maxwell & Moore, New York, $287; Oliver Machinery Co., New York, $159.

Bids will be received by the U. S. engineer office, Little Rock, Ark., until April 9, for the construction of the two steel hull 24-inch pump dredges, H. S. Taber and Robert McGregor.



New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

Wire Products Co., Rockford, Ill.; $25,000; by E. C. Traner, V. B. Velson, F. G. Hogland.

General Steel Products Co., Inc.; New York City; $25,000; by John McLaren, F. B. Knowlton, Edward C. Inderlied, all of 154 Nassau street, New York City.

Rock Island Bridge & Iron Works, Rock Island, Ill.; $30,000; fabrication and erection of structural iron work; by M. H. Kanary, Edward Manhard, Walter G. Murphy.

Keller Auto Co., Hoboken, N. J.; $100,000; to manufacture machinery; by Clarence D. Bland, Hoboken; Mattie W. Gibbs, Weehawken; Henry R. Blackburn, Jersey City.

Merwin Mfg. Co., Erie, Pa.; $75,000; to manufacture nails, wire products, special machinery, washers, wall ties and other hardware and builders' supplies, etc.; by O. G. Merwin, P. P. Miller, H. E. Fish, Erie, Pa.

The Speed Press Co., Camden, N. J.; $25,000; to manufacture printing presses and printing machinery; by F. R. Hensel, C. U. Martin, John A. MacPeak, all of 419 Market street, Camden, N. J.

The Vulcan Iron Works Co., Toledo, O.; $10,000; to operate a foundry and machine shop; by Fred H. Kirtley, Sigmond Sanger, Vada C. Southard, Trude Wooster and Aaron B. Cohn.

The Automatic Metal Shades Adjuster Co., Columbus, O.; $20,000; to manufacture shade roller structures; by Chas. H. Egelhoff, James M. Huckins, Wm. H. Dickinson, W. H. Dickinson Jr., and John K. Henry.

American Fence Construction Co., Manhattan, New York City; $30,000; iron fence, etc.; by W. F. Goodnough, 96 Church street; F. N. Lash, 30 Reade street; H. S. Chapman, 96 Church street, all of New York City.

Motor Installation Co., Manhattan, New York City; $30,000; to manufacture machinery, etc.; by Lucius E. Judson, 771 East Thirty-second street, Brooklyn; Nathaniel M. Brown and Richard J. Kent, both of 215 Montague street, Brooklyn.

Karthaus Fire Brick Corporation, Clearfield, Pa.; $60,000; by treasurer, C. B. McCullough, Jersey Shore, Pa.; directors, C. B. McCullough, Jersey Shore, Pa.; J. H. Miller, Lock Haven, Pa.; Singleton Bell, Clearfield, Pa.

The Warren C. Rude Mfg. Co., Crothersville, Ind.; $30,000; to manufacture metal specialties; by directors, J. M. Rude, W. C. Rude, C. W. Keach, A. W. Benham, G. M. Mount, W. P. Rider, J. W. Benham, F. B. Butler and William Goecker.

Shapiro Iron Works Co., Manhattan, New York City; $2,000; to do structural and general iron work; by Louis Rosenberg; 220 Broadway; Mark Abrams, 1758 Madison avenue; David Hackner, 163 Essex street; Isaac Eisen, 441 East Houston street, all of New York City.

The New York Steel Tire Co., 408 Lewis street, town of Union, N. J.; $25,000; to manufacture steel tires; by Edw. Ebel, 812 Malone street, Adolph A. Wahl, 942 Savoye street, Emil Wendland, 817 Syme street, W. Hoboken, N. J.; Jerome Fulhaber, 240 Paterson plank road, W. Hoboken, N. J.; Jules Ferond, Fort Lee, N. J.

Trade Notes

The Independent Pneumatic Tool Co., manufacturers of Thor pneumatic tools, now located at 1426 Farmers Bank building, Pittsburgh, will remove into larger offices, 1208-1209 of the same building, about March 1.

The Triumph Electric & Ice Machine Co., Oakley, Cincinnati, is publishing a new magazine, the Triumph Chronicle, the first number of which appeared on Feb. 1. It contains articles concerning the different products of the plant, home office and field notes, and general news regarding the trade.

The American Cast Iron Pipe Co. has decided to open four western offices, to be located in San Francisco, Seattle, Los Angeles and Salt Lake City. They will be in charge of Secretary J. W. Blair, whose headquarters will be in San Francisco. He leaves Birmingham soon to organize matters for the spring business, which opens March 1.

The Wheeler Condenser & Engineering Co., Cartaret, N. J., manufacturer of surface and jet condensers, pumps, cooling towers, etc., announces that its Cincinnati branch has been moved from 111 Ingalls building, to offices in the Mercantile library building, that city. The new office will be in charge of Richard L. Strobridge, who was formerly connected with the Boston office of the company.

Fires

The foundry of R. Estabrook's Sons, Boston, was damaged to the extent of $3,000 by a recent fire.

Fire caused about $10,000 worth of damage recently to the plant of the Auto Metal Co., Springfield, Mass.

The brass foundry of Glantz & Johnson, Jamestown, N. Y., was recently damaged by fire.

The plant of the Olive Foundry & Machine Co., Ironton, O., was seriously damaged by fire.

The foundry of the General Electric Co., Pittsfield, Mass., was damaged recently by an explosion.

The building at New Haven, Conn., occupied by the New Haven Pattern Model Works and the Lounsbury & Reilly Machine Works, was recently damaged by fire.

The painting and shipping department of the National Metal Molding Co., now occupying a frame building at Ambridge, Pa., was badly damaged by fire on Feb. 17. The loss was not stated. The company's own fire department extinguished it.

The Hart-Parr Co., Charles City, Ia., suffered the second fire this year on Feb. 18, when a loss estimated at several thousand dollars was done to the gray iron foundry, this igniting from the core oven. The first fire occurred about a month ago in the power house and resulted in an estimated damage of $5,000.

The Forest Wolf Co.'s warehouse on Third avenue, Pittsburgh, was destroyed by fire on Feb. 22. The Pittsburgh Steel Mfg. Co.'s plant, which adjoined the plant of the Diamond Forge & Mfg. Co., Pittsburgh, was damaged by fire when the former was destroyed on Feb. 21. The steel company was able to continue operation.